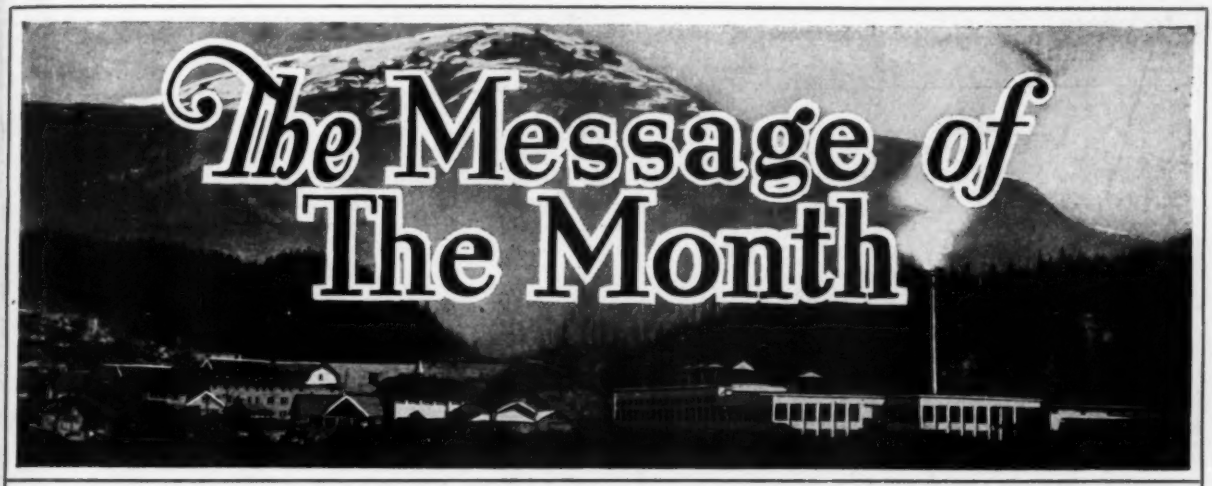


Act!!!

THE year 1927 was a bad one for the paper industry—bad because as the year progressed, profits vanished and were comparatively negligible as the year closed.

What caused this profitless condition? **Over-Production.**

Who is responsible for the over-production of paper? The paper mill managements and promoters.

Why? Ignorance!

Wilful, selfish ignorance, which if allowed to continue will result in the wrecking of the paper industry.

Of course, we consumed more paper than ever.

Every year will witness a continued increase in paper consumption.

But is that any reason why we should kill the industry by over-production?

Your boy consumes more food and more commodities as he grows into manhood, but is there the slightest scintilla of sense in trying to cram down his unwilling gullet oversupplies of food which will result in his total collapse?

If he's any kind of a kid with a will of his own, having backbone and grit, he'll reject the oversupply and let it rot on your hands before he will jeopardize his life attempting to consume it.

It is exactly that which the wise consumers of paper are doing to the foolish over-producers of paper.

When!—Oh, when! will the producers of paper wake up to the fact that over-production is the poniard thrust to the vitals of the industry?

When will the producers of paper divert some of the abundant funds they control into intelligent research of paper markets instead of into more mills and more machines to produce more paper at greater losses?

Are the paper mill folk all descended from squirrel origin, delighting only in building buildings and housing machinery whose only function is turning wheels around to no end and no profitable purpose?

Must this present and prospective over-production contagion continue until we all clamor for the appointment of a Will Hays of the paper industry?

Right today, this hour, we know of men signing up eager investors in new paper mill projects. They can get millions for more over-production, but not a thin dime for creation of more markets.

How is this thing possible in view of the manifest unprofitable condition in the industry?

Because the industry has no protection.

The time has arrived, in fact is long overdue, when the producers of paper for their own protection must get together and erect some "institute" or other organized body, whose sole duty it shall be to ascertain the facts regarding production, markets, opportunities of investment in the paper industry and spread this information broadcast throughout the producing, buying, consuming and investing public.

Of necessity, something of this kind must be done soon, else all the bloom for years to come shall vanish from the cheeks of the paper industry.

The wilful, selfish, ignorant exploitation of the paper industry must cease. The abject pity of the situation is that it ever was allowed to progress thus far.

There are brains—big brains, courageous, or-

EDITORIAL

ganizing and financial brains—in the paper industry.

THE PAPER INDUSTRY is doing this Paul Revere ride up and down and across the valleys of the nation from the Connecticut to the Willamette, in which are located the paper mills of the nation, sounding this clarion call to all paper producers: Awake! Get together! Wheel solidly in action against the deadliest foe which has ever afflicted our fair Industry.

The gage of battle belongs to you. You must initiate and move rapidly to the front, for the preservation of life of your industry.

Smothered by over-production in 1927, you will be garroted by it in 1928 unless you act—ACT!!

Turning Over a New Leaf

AT THE beginning of each year, many of us say we are going to turn over a new leaf. We rarely ever do, or in other words, we rarely ever change our methods or our thoughts, but go right along in the same old way that we did the year before. However, it might be well if we did turn over a new leaf occasionally, or if we should stop for a moment and take stock, as it were, of just what we are doing and what we are accomplishing.

There are many things we do that we can do better in 1928 than we did in 1927. Every man should grow each year as time passes on. We should become better. We should have more knowledge. We should be a little more considerate of our fellowmen.

Each man connected with a paper manufacturing establishment has throughout the year many ideas for improvement in the plant, in order to cut down costs, or on something that will be of benefit.

If each man should get a new idea every day, sift out the good ones from those that are worthless, utilize this idea and pass it on to some other man, what a wonderful improvement there would be in this great industry by the time 1928 had rolled along to its end. Some men in the industry have been thinking real ideas and giving them out to their fellowmen. Other people seem to think that if they get an idea they should keep it to themselves. We are sure that the latter thought is all wrong.

Just imagine what it would mean if each member attended meetings of the Technical Association, the Cost, Superintendents', or any other association, and having many good ideas gave them out, each would come back from the meeting with several hundred times as many ideas as he brought, or in other words, there is no chance to lose in forming real ideas and exchanging them with someone else who does the same thing. Everyone is bound to gain, and we are sure that if some such plan were followed throughout 1928, there would be more improvement in the industry than in any dozen years heretofore.

Costs can be cut at many points in paper and pulp mills. These plants can be made safer places to work; possibly a little better product can be produced at a little lower cost. These and a thousand other things can occupy the time of real thinkers in the industry. New and useful ideas are the things that make paper and pulp mills prosperous and keep them prosperous. They are really the most important things that we have to deal with.

Each issue of this publication is filled with real new and useful ideas. Not only the editorial pages, but the advertising pages have many new things in them which are worthy of being read. Many men get as much real value out of reading advertisements as they do out of reading the editorials, because these are generally devoted to new things that are coming out in the industry, and advancements which will help the paper and pulp manufacturer in turning out a bigger and better product.

Trade Association Work

THE conditions necessary to successful co-operation in trade association work were stated recently by O. M. Porter, secretary of the Gummed Tape and Binders' Board Manufacturers' Associations.

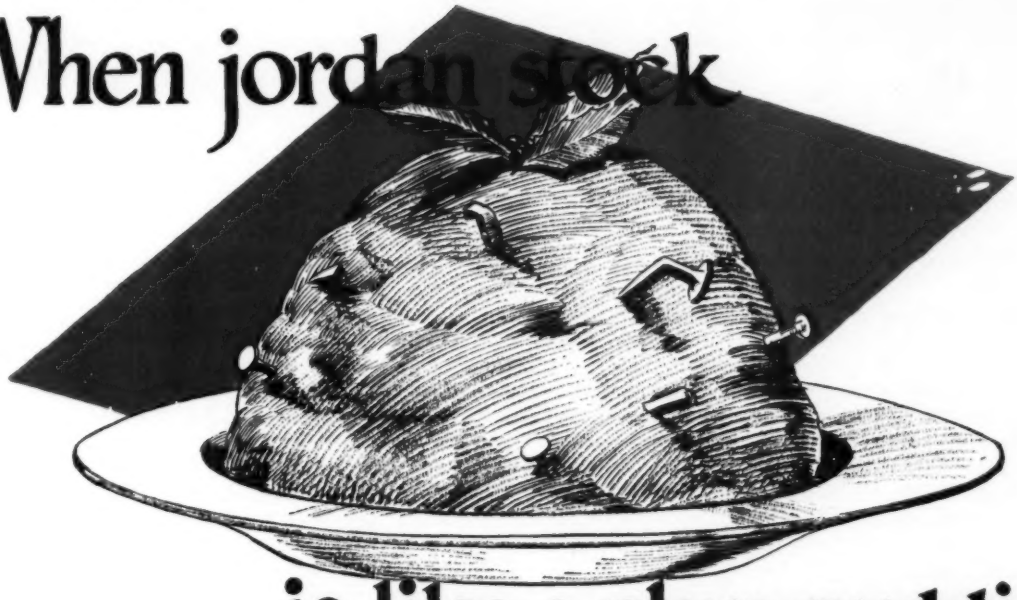
In the first place there must be a desire on the part of each member of the association to maintain satisfactory business conditions, and this must be earnest enough to impel each member to take an active part in the work of the association. There must be confidence among the members and in the secretary. This confidence in and among competitors results from close acquaintance, frank, honest discussion and willingness to meet the other fellow half way.

The members must have courage to maintain the association's policies in face of gossip and malicious rumors from salesmen and purchasing agents.

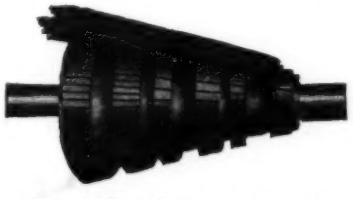
A necessary element is the cultivation of the spirit of "Live and Let Live." One producer or merchant can't hope to get all the business.

Effective co-operation will provide a knowledge of the market and facts as to production, orders, stocks, etc., so that the individual may

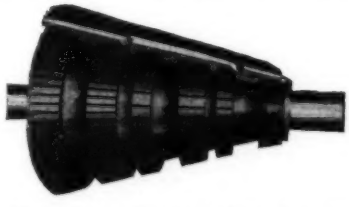
When jordan stock



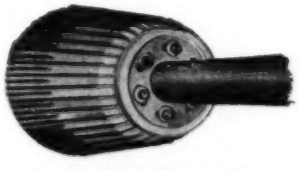
is like a plum pudding



Cast Steel Jordan Plug showing Super-Alloy Steel Plug Bars partially driven into Dovetail Slots



Plug Bars driven into Slots with Woods fitted between Bars. (Woods cut away to show Notching for Ends of Short and Medium Bars.)



Plug completely filled and Bars Anchored with New Type Patened Steel Disc.

If jordan bars had to refine only soft stock, jordan engineers would be relieved of one big problem. But when the mass is dotted with nails, metal chips and other foreign matter, as often happens, the jordan bars must be prepared to stand the added strain.

The super-alloy steel bars in Noble & Wood plugs bear solidly on the entire length of the plug body and are firmly anchored in dovetail slots or secured by means of steel bands according to specific conditions. Securely wedged in between these bars are fillers of selected, sound, dry oak or maple, absolutely clear.

There's not a chance of the bars wiggling. No amount of vibration can loosen them. The racking of foreign matter against the plug can't budge them.

With all their rugged dependability, these bars are so simply constructed that, if necessary, your nearest bar or knife manufacturer can duplicate them,—at a reasonable price unaffected by patent control or artificial restrictions.

Noble & Wood engineers are qualified to help you solve your paper making problems. Call on them whenever you think of new equipment.

NOBLE & WOOD
MACHINE COMPANY
Hoosick Falls New York

E D I T O R I A L

know his relation to the group from month to month and the relation of the group to general business conditions. There must be a willingness to get together or to act together in full conformity with the law.

On this foundation an association may build safely, slowly and surely toward more profitable and permanently satisfactory business.

As steps in the accomplishment of successful co-operation of the kind considered by Mr. Porter, there should be frequent meetings to develop acquaintance and confidence; frank, honest, discussion to determine the larger common problems; development of a program to meet those problems, and maintenance of this program by every member of the association.

A fundamental activity is an honest effort to determine actual manufacturing costs, on which may be safely built the individual's profitable selling price.

With this effort to develop accurate costs should be carried certain statistical activities to show facts as to supply and demand, including production, stocks and past prices.

After this, if there isn't enough business for the industry as such, will come co-operative advertising to create consumer demand; then will follow the whole range of profitable co-operative activities from Credit Bureau Service to Standardization and Research—all for results which would be impossible to individual concerns following a "go-it-alone" policy.

New Light on Safety Work

IT WAS for many years a cause of reproach to mill managers that they took greater care of their mechanical appliances, mill structures and equipment than they did of the human workers in the mill. Except for a few isolated cases this reproach no longer exists. One of the most significant developments of this era of industrial relations is the greater care now taken by the managers and higher executives of pulp and paper firms to provide hygienic surroundings and safe working conditions for their employees—to maintain human help in the same good condition that is expected of mechanical tools and appliances. In a talk with John Lundrigan, industrial superintendent of the International Paper Company, the other day, he remarked that it costs the same kind of money to damage or destroy a human being as to cripple, damage or destroy structures, equipment, or goods.

Hand in hand with safety measures to prevent injuries to employees, in all of the larger mills today methods are employed to insure and maintain their physical well-being. Medical examinations are now provided not only to determine the health and physical condition of men seeking employment but by periodic inspections to insure against the development of ailments or defects during the period of their employment.

All this has followed as a logical sequence of the measures advocated since 1915 by the Paper and Pulp Section of the National Safety Council to provide safety against occupational hazards, as well as improved working conditions in the plants of mills in membership. It is now well established that faulty working conditions and disregard of safety precautions, resulting in accidents to employees, do add enormously in instances to the gross cost of production. Accidents and sickness raise manufacturing cost from 1c a ton, in well managed plants, to 30c or 40c in others, where safety rules are not observed.

Stringent regulations are very properly drawn up for the observance of safety measures in all well conducted plants, where it is the duty of mill managers and foremen to see that they are enforced, the manner of enforcement being usually left to the discretion of individual managers or superintendents of mills who are responsible to higher executives for the orderly and profitable operation of the plant.

With some of the larger pulp and paper firms operating a group of mills, quarterly reports are made out of accidents at all mills, copies being distributed for comparison to the mills reporting. In these reports, the costs of accidents are stated, together with a description of the injury and the particular part of the mill in which the accident occurred. The costs of accidents in medical attendance and insurance compensation being computed in terms of cents per ton of product, this must be an incentive to superintendents and foremen to better conditions in their respective mills, if the force of example is likely to be felt as it should be.

As regards compulsory medical attention, any objection which might be felt towards this has been removed by educating the men to understand that the company considers it a legitimate business expenditure to insure the good health of their employees and maintain them in fit physical condition. When there is any marked increase of lost time through injuries or sickness, this is reflected in the higher cost of production, and superintendents are apt to be on their mettle to make such a record for the observance of safety measures as will show their plants to be as profitable to the owners in a productive way as other mills of the group.

THE PAPER INDUSTRY

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Your Income Tax Return

By W. B. SWINDELL, JR.

M. P. Snow and Company, Chicago

ONE of the main things you are going to think about when you file your company's income tax return is depreciation. All manufacturers have had this to consider in reporting income to Uncle Sam. And paper manufacturers have certainly had their share of depreciation problems. If someone were to ask me now, as they sometimes have, what one thing has given paper manufacturers the most study in filing their tax reports, I would say, without any need for lengthy consideration, the item of depreciation. Realizing that this is a deduction you are going to take this year on your return for 1927, I am going to touch on it to a considerable extent in this article.

A papermaker does not need to be told that his plant, machinery and equipment are subjected to a different sort of strain and exhaustion from other manufacturers'. It is true, of course, that he has to a considerable extent an entirely different kind of machinery and equipment. It is further true that his properties are subjected to usage which is calculated to shorten their ordinary lives.

In one of the most interesting and valuable decisions which has been handed down in the case of a paper manufacturing company, the U. S. Board of Tax Appeals has ruled in the case of an eastern paper company. In this instance, the Board allowed the company to take depreciation at the following rates:

Machinery and Equipment	15%
Buildings	6%
Railroad	15%
Office Furniture and Fixtures	20%
Garage Equipment	25%

This does not mean that any papermaking concern may use the above rates. As a matter of fact, the company in this case was permitted to use the rates only after showing that its properties were subjected to unusual wear and tear. During the years in question this company operated its plant to its maximum capacity and subjected it to extraordinary stress and strain, in order to keep up with the requirements of its customers. The peak of the volume of business was reached in 1920, and after that year it was found that the plant and equipment had deteriorated to such an extent that parts thereof had to be practically rebuilt and replaced. Due to the unusual circumstances surrounding the operation of this firm's plant in these years, exhaustion, wear and tear was held to occur at the above rates.

In handing down its ruling, the Board said the testimony in this case showed that in plants of this kind, deterioration of buildings, equipment and machinery proceeds at an especially rapid rate on account of the constant presence of moisture and fumes from chemicals, as well as from other causes incident to the business of manufacturing its product. The paper company showed in this instance that a roof, either metal or wood, lasts not to exceed six years; ventilators not to exceed three years; rolls had to be reground every six or eight months and gears were being constantly replaced. In brief, the company showed to the satisfaction of the Board that under the extraordinary conditions existing in its plant, depreciation occurred at the rates shown.

Machinery or buildings which are subjected to unusual moisture and to the action of chemicals which eat into them are not going to last as long as those situated in dry places and operating in a normal way. At the same time, where these properties are in the hands of different companies in the same line of business, and one concern uses them more than the other, there will be a difference in the lives.

Screens, beaters, cookers, belts, felts, dryers, grinders, pulleys, shafting, dynamos all are given certain estimated lives by the people who make them. But the manufacturers of these things will tell you that their own products used for a different length of time each day and given different care by two companies in exactly the same line of paper manu-

facture will become worthless at varying dates. The same thing goes for buildings in this line of business. That is why depreciation is sometimes a baffling thing to arrive at, for tax purposes. Your figures may show you that an engine or a boiler will last an average life of so many years in a paper plant. And yet, that piece of equipment may either wear out completely, become obsolete or require important and expensive repairs or replacements far sooner in your case than the average shows. That is why, an average rate of depreciation is useful to you only as a guide. Had the taxpayer in the case I have cited used an average rate he would not have received the relief which he undoubtedly deserved.

After all, no one can tell about the life of your buildings and equipment as well as you can if you have been in the business for some time. Someone may tell you what this sort of machinery is good for in years, **ordinarily.** But, that does not mean it will last that long in your case. It may wear out sooner or later than it ordinarily does.

Depreciation Allowances Not Retroactive

In taking depreciation, however, there is one important thing to keep in mind. Where you have failed to take a reasonable deduction for it in prior taxable years, you may not accumulate the depreciation sustained in those years and deduct it in the current year or in any other taxable year except the year it occurred. For example, if for 1923 and 1924 you did not take depreciation, you are not allowed to bunch the depreciation for these two years in with 1925 and take it on all three years in 1925, if the property has a further useful life. This does not mean, though, that depreciation may not be allowed for prior years if they are not outlawed. The paper company whose case has been mentioned above attempted to take several years in one and its plea in this respect was denied by the Board.

The Anticipation of Obsolescence

Just when a concern may start deducting on its income tax reports for obsolescence has also caused some study and debate. The Board of Tax Appeals has helped clarify this point by a ruling, also. It held that no amount may be charged off in any year in anticipation of obsolescence of a building which may become obsolete 5 or 10 years later. However, according to the Board, a certain amount of obsolescence may be claimed from the time that it becomes certain that at a definite, future date the building will be obsolete. The figure representing obsolescence should be, approximately, the difference between the fair market value of the building as of March 1, 1913, or its cost if acquired after that date, less depreciation, and the estimated salvage value. This obsolescence should be spread over the period from the time it becomes certain until the building become obsolete and should be claimed in the returns filed for those years.

It will be evident from this that the matter of proving that a deduction for obsolescence is justified will be a thing of individual proof. In other words, it is up to you to show conclusively that the property or properties are going to be, within a certain definite time, actually obsolete.

Provision for Net Losses

A thing which a great many people overlook in making up their tax reports is the provision of the revenue law dealing with "net" losses. This provision has been in the law for some time but it is still not well known. Let me, therefore, call your attention to it. If you sustained a net loss in the calendar year 1926, you are entitled to apply this net loss against your net income of last year, 1927. If your net income of 1927 does not absorb it, you may take any balance forward and apply it against your net income of this year, 1928. But, you may not take any such loss forward for more than 2 years. This provision allowing you to take a business net loss forward goes back to 1921.

There has been a great deal of question as to just how this net loss privilege applies. I had a letter in the mail this morning from a concern which said it had not been aware of such a provision in the revenue laws. The president of the concern, who signed the letter, asked what should be done where his concern had lost a large amount in 1923, made money in 1924 and lost a small amount in 1925, making a net profit again in 1926. I cite this because cases somewhat similar to this one are frequently seen. I advised that he could take his net loss for 1923 forward against his profit of 1924. If the 1924 net income should not absorb the 1923 net loss, the remainder of the loss may be carried forward to 1925. But, in this case, taking it forward to 1925 will not be worth anything because there is already a loss in 1925 and he may not use the remaining 1923 loss to swell the loss of 1925 which can be taken forward against 1926. The net loss may not be carried forward for more than 2 years and therefore no amount of the 1923 loss could apply against 1926 net income. The 1925 net loss could, however, be applied against 1926 and if 1926 did not absorb it, could be taken against the net income of 1927.

Most engineers like to know what various things cost. It is interesting to know that the cost for transporting crude oil through pipe lines from Cushing, Okla., to Chicago, a distance of 700 miles, is 46c per barrel. To St. Louis, 410 miles, the cost is 37½c. To Bayonne, N. J., 1,460 miles, 76¾c. In addition to this, there is a so-called "gathering charge" of 20c per barrel—and sometimes there is another charge for selling.—Schaphorst.

Safety Practice in Machine Room

Written and Distributed at Plant of Champion Fibre Co. During Safety Contest in 1926

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co., Canton, N. C.

As Part Two of "The Structural Formation of Paper" is not yet ready for the press, the writer feels he owes an apology to his readers. It has been the object in these articles to stress the ***Why*** *of paper making operations. We are convinced that for instructive purposes, the* ***Why*** *is more important than the* ***How*** *of actual accomplishment. Practice will teach us* ***How****; the* ***Why*** *is not quite so easily acquired.*

The reason we are not quite ready with Part Two constitutes a little lesson in itself. When tracing the subject of a thesis to its lair, we invariably demand at the conclusion, ***"Prove it."*** *In two operations vital to the structural formation of paper, although we have been accomplishing the* ***How*** *successfully for many years, we find it necessary to examine the subject much more deeply before we can say* ***Why****.*

We are therefore offering a little paper which may prove timely as we enter 1928.—*Author.*

HAVE you noticed that our automobile has developed carburetor trouble? At the end of the first period of the race we are four days' run behind. Besides that, we have had three minor accidents—one cut finger, one burn and one crushed finger.

That sounds just like a machine room; cuts, burns, and broken fingers. In the days gone by, the old timers would tell a man he couldn't be a papermaker until his fingers had been caught in the calender stack, that supposedly being a novice's initiation into the Royal Order of Hay Makers.

Calender fingers were the hall mark of the papermaker just as cauliflower ears were considered the traditional prerequisite of the prize fighter. We have only to look at the pictured profile of modern champions, however, to realize that prize fighters have made some progress in Safety First practice since the days of Sullivan, ergo, it is not now considered necessary to present mangled fingers as a visa to a papermakers' convention.

Perhaps the comparison can be carried a little further.

In olden days prize fighters were expected to be remarkably well developed and fit from the chin down; except for density and shock absorbing qualities, development from the chin up was not considered absolutely essential.

In these modern times of press propaganda, moving picture rights, etc., a prize fighter must pay more attention to his development from the hips down and from the chin up; the latter having a slight predominance over the former.

Both these areas of development are necessary to the papermaker. Anybody who has chased tail ends over a paper machine throughout a hard tour has experienced the wabbly sensation in the head which means loss of control.

Keep the feet warm and the head cool is not only good medical advice but darned good papermaking philosophy.

The major mechanical hazards of the machine room are fully protected. In the operation of machinery, however, there will always be minor hazards which can only be guarded against by the physical alertness and mental acquirements of the operator himself. If we develop these qualities and then get hurt, we can really say it was an "accident" in the true meaning of the word.

A grain of practical information is worth a bushel of theorizing and we can benefit most by studying where the hazards are and how to minimize them. If you have to break the paper down at the wire, use the squirt gun to cut the sheet. Sometimes on heavy papers the squirt gun may not work quick enough and it becomes necessary to use the hand. In that case, remember that the paper roll is closer to the wire than it is to the felt, so break down the paper **between** the paper roll and the **felt roll.** If working on right hand machine use the **right** hand, on left hand machine use the **left** hand.

The writer once worked for a man who was the sole owner of a paper mill. This gentleman liked to play around the machine and wore a solitaire diamond ring. One day he went to break the paper down and got his hand caught between the paper roll and the wire. It was a perfectly good diamond for it cut the wire in two. When putting weights on the press levers, keep the feet from under the lever. The threads on the eye bolt may strip, dropping the lever down, and a 50 pound weight on the big toe may increase the vocabulary but not the comfort.

The blade of a press doctor is honed to the sharpness of a razor by the revolutions of the press roll. It takes two men to clean a doctor blade, one to hold the doctor up and the other to scrape the blade. Use a scraper and keep the fingers clear of the cutting

edge, having the doctor lifted sufficiently high so that the roll can be cleaned without danger to the back of the hand. When you have finished, tell your helper to lower the doctor down. If he lowers it before you tell him, talk to him in Esperanto.

When cleaning slime from wet felt rolls, remember there is a **take in** side and **a come out** side. Keep the hand on the **come out.** The writer was pulled round a felt roll less than two years ago. Net loss—one broken arm, one broken nose, six teeth. Net gain—more sense.

The dryer felt rolls are set close to the dryers in order that the paper may derive the greatest benefit from the pressure of the dry felts, they are perfectly safe if one handles paper the right way.

Never pass the paper from one dryer to the other with a **closed fist.** Take the paper from the bottom dryer between the thumb and forefinger, holding the paper in the palm of the hand by the thumb. With fingers extended, pass the paper to the upper dryer. Let the wrist, elbow, and shoulder joints do their share of the work; do not keep the arm stiff. If this description is not quite clear, attend an afternoon tea some place and watch the ladies lift the cup from the saucer; only for Pete's sake, don't wiggle the little finger.

Before spearing paper from the dryers on a fourdrinier machine, **stop** the dryers. You may do it on the run successfully nine times and get caught the tenth time. Maybe the felt would be torn, or maybe the flying spear would knock an eye out. It is better to be safe than sorry. The dry end of the machine with its calenders, reel and winder, is probably more prolific of accidents than anything else in the machine room.

Working on Calenders

When putting the paper through the calenders, give at least a foot of paper projecting **from** the hand **towards** the calender nip. That is your margin of safety. When playing golf, the player keeps his eye on the ball; when boxing, a man watches his opponent's eyes; that is, each watches closely the most vital thing concerned with the job on hand.

The same thing applies to stacking a sheet of paper. Keep your **eye** on the calender nip you are going to put the paper through.

Sometimes wet calender scabs are hard to take off and require considerable pressure on the calender scraper. Apply your scraper to the roll **below** center **against** the direction of rotation, if it is the bottom roll of a pair which form a nip, and **above** center **against** rotation, if it is the top roll of the pair.

When pressure is applied beyond center of a revolving roll, the speed of the roll will have a tendency to pull your scraper and fingers into the nip.

When cleaning calender doctors, the same condition prevails as with press doctors. The blades are sharp. If you are holding the doctor while the other man cleans it, wait till he gives you the signal before you lower the doctor down again. His hand is in danger; not yours. Cleaning a plugged stack is done by stopping the stack, raising the rolls above the plug and digging the wet paper out with a pocket knife. Probably there will be men working on both sides of the stack. Before starting the rolls again, it is safe policy to call out, **stand clear stack!** Then there is no danger of any man being overlooked and hurt.

To put paper on the reel requires adept skill. That can only be acquired gradually and when a man has sufficient experience and poise to maintain concentration on that particular part of the job despite surrounding confusion.

The reel shell is iron and weighs approximately 1200 pounds, and is driven by frictional contact with the revolving iron drum. It is not seemly that flesh and blood should part these twain.

Have the fourth hand cut an end about 20 inches wide; then keep your hand on the outside edge of the sheet. Pass the paper under the shell with the outside edge **clear** of the shell and the hand going in the direction of the journal. Putting paper on the reel is somewhat spectacular and seems to stimulate the imitative qualities we share with the Simian tribes. If you are a beginner in the machine room, don't try to put the paper on the reel until you know your way around.

Develop the Finger Tips

A most important part of the duties of a backtender and third hand is to constantly pass the hands over the surface of the paper as it is winding up. By this means the papermaker can detect wrinkles, cuts, calender spots, unequal finish, etc. Should the hands be wet or even moist with perspiration, they will stick to the paper and possibly throw you off your balance into the reel. In this connection, it is interesting to know that the finger tips are far more sensitive and much more can be learned through them than the palms of the hands. Pressure is not necessary. A blind man reads his Braille type through the tips of his fingers. The inspection department has at various times insinuated that possibly we are a little blind. Let's develop the finger tips.

When helping feed the paper over the winder, the fifth hand must turn a reel having a gross weight of 4500 pounds. This he does by means of a crank. The strength of a chain is only equal to its weakest link. The human body is subject to the same governing principle and the inside wall of the groin muscle is distressingly weak. When turning the reel around keep the heels together, and there will be no need to undergo an operation for hernia.

The primary duty of a slitter is to cut paper; it

performs this duty most excellently when revolving at a high rate of speed. If given the opportunity it seems to display a malicious propensity to cut flesh as well as paper. If the shaving becomes entangled with the slitter, **stop** the slitter before removing the shaving, by doing this you will once again demonstrate the supremacy of the animate over the inanimate.

The drums of the winder rotate in the same direction and do not form a nip, yet their close proximity make them dangerous. If anything should be jammed between them friction would be created. Do not attempt to feed paper to the winder tape by inserting the hand between the drums.

The winding paper and the drums do travel in opposite rotation and form a nip. After a break on the winder, always feed the paper around the roll with a **closed fist.** The bulk thus presented will be too great to pass the nip and danger will be eliminated.

Sometimes, due to exuberance of spirits, particularly during a good run, when a break occurs the boys let out a whoopee reminiscent of the days of '45 when the Injun roamed the prairie.

It seems a shame to curtail such evidence of vitality and friskiness, yet the practice contains a small element of danger. When shouting is pernicious among machinery, a shout more or less means nothing and some poor devil caught in the machine may be shouting for help and nobody notice him. It is a small point, yet the writer has painful memories of such an incident.

Destructive criticism is not much use without constructive suggestion. Let me therefore suggest that if you feel you must cheer, do it like the henpecked husband did when he saw his fat aggressive wife slip on a banana skin. Cheer inwardly.

America's First Papermaker

WILLIAM Rittenhouse, universally known as the founder of the paper industry in America, is the subject of an article by Harrison Elliott in the December, 1927, issue of **International Paper Monthly,** which is of considerable historical interest. It is there set forth that William Rittenhouse came of a family of papermakers who made their home in Arnheim on the Rhine, Prussia. He was born in Prussia in 1644 and died in Germantown, Pa., in 1708. After having engaged in papermaking for a time in Amsterdam, Holland, he later settled in Arnheim where he was successful and prosperous, but, becoming dissatisfied with social and civic conditions, he disposed of all his property and left for America with his wife, two sons and a daughter. They arrived in New York in 1688 and moved to Germantown shortly afterward. He was a follower of the doctrines of Menno Simons, founder of the Mennonite church, and become identified with the Mennonites in Germantown where he was chosen minister and was later appointed the first Mennonite bishop in America.

In 1690, with three partners Rittenhouse erected a paper mill on a small tributary to Wissahickon Creek; fifteen years later the mill passed into his possession. Being the only papermaker among the directors, he was naturally the most important factor in the company.

The original mill structure was swept away by a freshet in 1700, and this excited the sympathy of William Penn, who very properly regarded the enterprise as a necessity to the prosperity of the commonwealth and sought aid for Rittenhouse among the settlers. Another mill was built for Rittenhouse and his son, Claus, a short distance below the site of the first. This new and more substantial structure was in full operation in 1702.

It had been no small task to establish such an industry in a new country. There were certain appliances which had to be made under primitive conditions. The making of paper by hand required equipment which a scarcity of materials and lack of tools made it difficult to construct. This handicap is not evident in the well-preserved sheets of this mill's product which are still extant. Not only was a good and lasting paper made, but three different styles of watermarks were used, an evidence of the papermaker's pride in his product.

It is interesting to note that although wood was not at that time thought of as a material for papermaking, an old deed dated 1705 cites the boundary of the mill tract as "beginning at a Spruce Tree near Wissahickon Creek." Here at their door was the very material which was to work such a revolution in papermaking, while their crude, clanking stampers were noisily pulping cast-off rags originally made from flax grown nearby. That their raw material was scarce is evident from the frequent appeals in the newspaper of that day beseeching the colonists to save their rags for the papermaker.

The mill made writing and printing papers originally. Some of the output was used by the Continental Congress; Benjamin Franklin took some of it for his almanacs; and the first newsprint made in America was produced here for the **American Weekly Mercury,** Pennsylvania's first newspaper. **The New York Gazette,** New York's first newspaper, was printed on paper made in the Rittenhouse Mill.

In 1706 William Rittenhouse gave a three-fourths interest in the mill to his son, Claus. Thereafter the mill remained in the possession of various members of the Rittenhouse family until the land was acquired by the Fairmount Park Commission in 1890.

Knowledge inside of the skull of a human being and not used is as much of an evil as gold hid away in an old stocking. Both are power wasted.—Houghton Line.

Current Thought by William Sibley

1928—and Beyond

DURING 1928—and beyond—anyone who lacks vision will fail. There isn't the slightest doubt about it. Regardless of who he may be—university student or manufacturer of paper;—regardless of how many fraternity pins or paper mills, athletic letters or acres of uncut timber, degree insignia or capital assets are his, if he hasn't vision, and the intestinal fortitude to exercise that vision, he will fail—at any event in the commercial sense. The reason is to be found in the tremendous rapidity with which we are progressing and will continue to progress.

Time was when a university training was the open sesame to commercial success. That was in the day when workmen's wages were paid semi-annually, the factory system of production was yet undeveloped, domestic requirements were few and semi-illiteracy common. Those conditions no longer exist. Hence the need for the best possible training, vision, and its exertion.

Time was when mass production and the installation of material-handling machinery was the key to success for the manufacturer. That was when the dollar was at par, dealer's and jobber's stocks were large, installment selling was little or unknown, and efficiency experts were drawing high salaries. Today, this condition is changed. Scientific research has a definite place in every development. Competition is no longer limited to co-workers in a single industry, and radical, far-reaching changes are everyday occurrences. Science and engineering have assumed command. Hence the need for vision—and its exertion.

Just last summer, Mrs. Sibley and I motor-toured through the East. Leaving Chicago, we went as far south as the Blue Ridge Mountains, as far east as Boston, crossed the St. Lawrence River at the Thousand Islands and returned through Ontario and Michigan. We traveled 3,300 miles, **and less than 50 miles of our highway was unpaved.** Nearly 98.5 per cent of our trip was made over smooth concrete; and calmly and unhurriedly, we averaged 265 miles a day.

What cynical laughter would have been caused by the statement, had it been made just 30 years ago, that the mechanics then toying with little "benzine buggies" would not only develop one of the greatest industries in all history, but drag along by sheer force the subsequent development of the cement industry, road machinery business, and many others; at the same time cause the demise or serious disruption of no less than six theretofore great industries. And just 30 years ago.

Thirty years from today our highways will be four times as wide; rebuilt to withstand several times the weight they now endure; flood-lighted at night to permit 24 hour travel; boulevarded to enforce segregation of vehicles in accordance with their speed; and grade crossings will be a thing of the past. What the benzine buggy mechanics started for the cement and road building machinery folks, 30 years ago, will be extended to the structural steel, electric light and power, and other industries in the early tomorrow.

In the Span of One Lifetime

While in Worcester, Massachusetts, I talked with a stooped, white-haired nonagenarian who told me when he started to work, every concern in his community paid men's wages semi-annually. His weekly wage was $3.50 and his hours of work were from "sunrise to sunset." Today, factory workers enjoy eight-hour days, produce from four to six times as much, and earn nine times the wage. **And all in the span of one lifetime.**

Edison has done more than any other one man to develop electricity. Today, that form of energy is making hens lay six to eight eggs a day, by means of the ultra-violet ray; powering ultra-audible microphones that will pick up insect voices, thus opening a whole world of sound to scientific and practical research; transmitting the world's news at the rate of 186,000 miles a second by radio; lengthening the span of human life from 37 to 58 years; digging tunnels under mountains and rivers; measuring the intensity of star light, and removing tonsils painlessly. **And all in the span of one lifetime.**

When Uncle Joe Cannon was born—and he is still living—we had no such things as ether, galvanized

wire, babbitt metal, trip hammers, steam shovels, acetylene gas, linotype machines, cylinder presses, gun cotton, typewriters, X-ray, manufactured gas, airplanes, telephones, adding machines, motion pictures, punch presses, the Suez Canal, motor boats, incandescent lamps, automobiles, roller flour mills, repeating rifles, time clocks, nickel steel, or any other of a thousand different things that today are absolute necessities.

What a profound change in our methods and appliances during the past fifty years! Ponderous creatures of steel have been made substitutes for muscle, they working side by side with instruments so delicate as to be rendered inoperative by the glow of a man's face or hand. In the northern iron range, electric shovels handle 90 tons of ore at a single dipperful, while in the laboratories of the General Electric Company there is a machine that will measure atoms one-billionth of an inch long—or things so small as to require a million set on end to equal the thickness of a fly's wing. Never before have any people been enabled to perform such tasks as are now and here accomplished. And all because we have developed more than 12 mechanical horsepower for every member of our population. Considering only the hydro-electric power we have thus far harnessed, we have from this source an amount of energy that exceeds the combined strength of all the people living in England.

Nor do our recently developed machines and appliances stop when they have met the requirement for which they were designed. Rather, each machine creates needs unto itself—opens up channels for further expansion, development and refinement. Hence, there is constantly present the element of surprise, and this is an element that is an ever-present threat for every phase of industry. As an instance, what will happen to the battery business, now that there has been perfected inexpensive units that will power a radio direct from the electric light socket? It is easy to see millions of dollars worth of business coming to the public utility companies from this source,—that formerly went to the dry battery manufacturers.

What Is Coming

Any attempt to look into the future reveals almost fearsome developments. That present tendencies will continue is taken for granted, if only because nearly every development opens the way for others, farther-reaching. Radio is just one of the developments that lies immediately ahead, and with easily discernible effects. It must be apparent to every thoughtful individual that radio will become an increasingly important factor in our everyday lives. The perfection of the already developed beam radio, which enables the transmission of messages in a single direction, means the employment of radio by commercial institutions for price quotations, sales direction, and business management. Already radio has been used as a guiding influence for motor boats and automobiles. This means that presently great freight trains and large fleets of motor trucks and airplanes will be traveling across the country with no more than a single man in charge. Even now the Chicago and Northwestern Railway is cutting down their main line signal towers and semaphores, substituting radio and electric control. Not far distant is the development of successful and economical broadcasting of both light and power. When that development reaches perfection, which it will, almost over night, just what will happen to our enormous wire mills is anybody's guess.

The broadcasting of pictures by radio is a development of the early tomorrow and this will doubtless mean a complete hook-up and positive correlation of every public school in the United States. One great educational system will supplant our old, inefficient, and widely differing, multiple systems of today. In our travels by motor, plane or rail, the radio-telephone, equipped with beam control, will keep us in constant touch with the office. This will make the personal absence of executives from business a matter of small concern.

Just around the corner lies the completion of the Gulf to St. Lawrence waterway, with its profound effect on every industry. Such a development will completely alter the financial, commercial, and social map of the entire United States—much to the discomfort of those now clustered about the mouth of the Hudson River—but not so much as some fear, since present transportation facilities will be perfected to still further shorten distance and cut carrying costs.

Within the next 50 years some of our cities will have populations of 20 to 30 millions. And it is impossible to visualize a city with a population of 25 million people without foreseeing definite changes in our mode of transportation, housing and feeding. Moving stairways and sidewalks will become commonplace; milk will be transported in great pipe lines from the dairy regions; sanitary boards will demand the installation of mechanical refrigeration into every home; the standardization of fruits and vegetables, with food in concentrated form, will have progressed far toward perfection, and air transportation in taxi form will have become a positive necessity.

Such statements may seem chimerical. If so, then it is because we would rather cling to things known than to exercise our vision. It is characteristic of human nature to falter in the acceptance of anything that will disrupt the even tenor of our ways. But that characteristic is becoming ever more dangerous. The present day rapidity of development makes it imperative that this be changed.

We move rapidly, nowadays, with the result that we must keep abreast of the times if we are to stay in the race at all. It required 110 years to develop the steam locomotive but only 20 years to develop the

automobile. It took 80 years to develop the telephone, four years for the radio. During 1925, only 362 airplanes were sold to private companies or concerns. Last year, such sales topped 20,000. During the coming five years, the aircraft industry will go as far as the automotive industry did in its first decade.

If we are to look backward with pride, we must look forward with vision. If we are to increase the percentage of successes among either university students or manufacturers, we must exercise that vision. Science and engineering have assumed control. Let us never lose sight of that fact.

Water Softeners in Paper Mills

By W. F. SCHAPHORST, M. E.

I BELIEVE the following incidents pertaining to the use of softeners in paper mills will be of interest to the average paper mill engineer:

A box board plant in the Middle West holds the record of less than 1,000 pounds of coal per ton of paper. The superintendent attributes this high efficiency in part to the fact that the boilers are kept free of scale by a high grade water softener. The boiler feed consists of about 90 per cent condensed returns and 10 per cent make-up, and since installing the softener it is necessary to wash the boilers out only about once in four months. The boiler maker who formerly repaired the boilers has not been called in since the softener was purchased, and he states that if every plant had a softener, he would have to go out of business. The water comes from wells. Four Stirling boilers, 300 h. p. each. Boilers operated at 100 to 125 per cent of rated capacity.

The following letter was written by the manager of a paper and box board mill after several years' experience with a softener:

> "We installed a softener on account of our bad water condition stopping up our feed line and also because we were figuring on putting in economizers, and we could not use economizers with our present water supply without putting in a purifier or softening plant. This plant has been in service now for a couple of years and has given us entire satisfaction and has done everything that they claimed it would do. We are very well pleased with the results that we have obtained from the installation of this softener."

Again, an inspector recently called upon a manufacturer of corrugated paper who some years before had purchased a softener to treat a well water high in scale-forming solids. He found that the user was well satisfied with the results, although the operating force was giving but indifferent attention to the apparatus, due to the fact that there had been a complete change in the personnel and the new staff knew practically nothing about the softener. However, only a small amount of scale was being formed, whereas before the installation of the softener it had been hardly possible to operate the boilers with the water supply available. Several months after the inspector had instructed the new operating staff, the chief engineer reported that the condition of the boilers was improved, and two weeks later he reported that the boilers were clean, with the exception of a very light scale on the first four rows of tubes, while at the end of three weeks he wrote:

> "I thought it would be of interest to you to know that when we actually got into the boiler to clean it out, the scale that was formed in the first four rows of flues washed out very readily with a hose, which is much better than we expected."

Your Power Plant's Daily Dozen

THERE is an old fable to the effect that a tiny ant once saved the life of a huge elephant. That fable, for the paper manufacturer, means "pay attention to the details."

A few years ago a large Chicago printing establishment was compelled to stop its presses and close its doors all because of an $18-a-week girl. The printing house had nearly completed an exceptionally large contract for mail-order catalogs. Paper had been purchased by the car-load. Engraving and composition costs had been enormous. The work had been printed in colors, the "forms" gathered and bound and the books made ready for trimming. In this last operation the girl who operated the trimmer set the knife about a quarter of an inch too far forward—and trimmed the printed prices off every article in the catalog, instead of merely trimming the edges. Firing the girl failed to keep this firm out of bankruptcy.

While the business of manufacturing paper is somewhat removed from that of printing, the story none the less illustrates the costliness of even so small a matter as a quarter-of-an-inch, the importance of details, and the apparent ease with which not only profits but sheer existence can be trimmed.

In and about the power plant or boiler room of the paper mill, there are countless details that require constant watching if the ledger is to show black and not red. The photograph which is reproduced herewith is a view of the boiler room in a large middle western paper mill. While perhaps not typical in every respect of the average boiler room, it is none the less a battery of five furnaces under 300 h.p. boilers and for our purposes identical with any other plant. By merely looking at the unretouched photograph or by visiting a similar plant one could not tell how many or where the invisible "profit eaters" have their abode. To force home the importance of such details and the insidious menace of small leaks, we have indicated by means of arrows a dozen places that are commonly found to be the abiding places of "profit eaters." Those indicated are by no

means the only ones to infest the average plant. They have been selected merely to afford a striking example of the losses that can be and are being sustained by literally scores of plants throughout the country.

1—Tie straps that have become loosened allow the insulating material to expand, which permits the escape of heat that might better be applied to the processes, since heat is merely coal in another form.

2—All metal surfaces should have an annual, if not semi-annual, coating of anti-rust. There are a number of excellent compounds on the market—some better adapted to particular uses than others. Consult a recognized authority or call in the representative of an established concern that advertises.

3—Is there filed in the office a complete chart showing the location, purpose and direction of flow for all power plant and boiler room piping? Such a chart would be extremely valuable to the company in the event that it became necessary to employ a new and strange engineer.

4—Gauge glasses should be kept clean inside as well as outside.

5—It is costly to consider coal as nothing but coal. For the engineer and the treasurer of the company coal is heat. To merely order so many tons or carloads of coal, then use what is received without periodic analysis of coal content frequently imposes a heavy load on the fuel bill.

6—This instrument should be subjected to periodic check-up in the interest of accuracy and efficiency of operation.

7—Packings that permit the slightest leak or hiss constitute a serious loss, when calculated over a twelve-month period.

8—Bearings that have become worn not only mean that you pay for worthless friction but that needless depreciation is being endured.

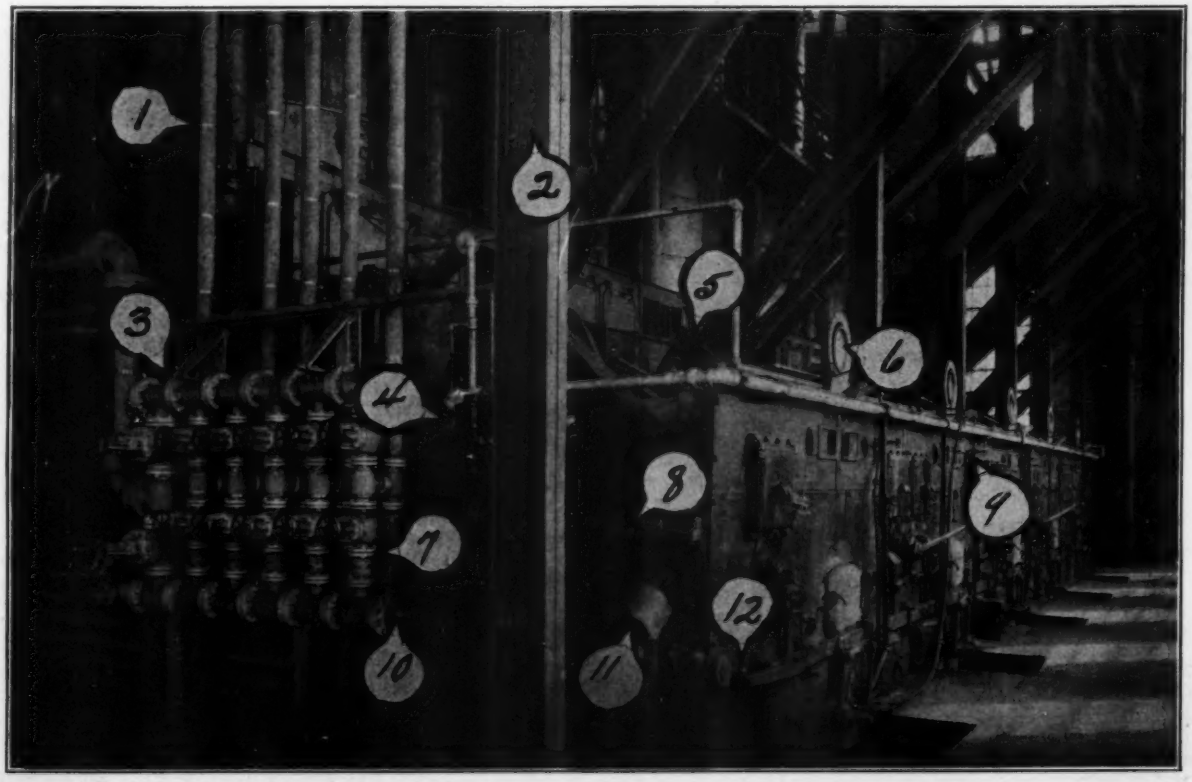
9—If this valve leaks, the air compressor must work longer and harder—with larger fuel bills as the result.

10—Valves that fail to open fully or close tightly can seriously impair the efficiency of the entire plant and waste an astonishing amount of water.

11—Gears that do not mesh properly or which have chipped and broken teeth require from 20 to 100 per cent more power for their operation.

12—Purposely left to the last is the small, insignificant, yet all-important, grease cup. To overlook this little device means much. But to use the wrong type of grease may mean just as much. In comparison with the proper lubricant to apply, there are lubricants on the market that will actually hasten wear and depreciation. Consult a lubricating engineer, if in doubt.

Did you ever stop to think of this—we can do what we think is right and still be thinking wrong. This is just a hint to listen to what the other fellow has to say.—Making Paper.



Rules for 1928 Safety Contest

The Paper Industry Fourth Annual Safety Contest, Beginning January 1, 1928, Will End June 30, 1928

RULE 1—(1) This contest is open to all members, Paper and Pulp Section, National Safety Council, employing more than 20 employees in one mill, or as hereinafter provided, using fourdrinier, cylinder or pulp mill machinery and actually engaged in the manufacture of pulp, paper, container board, strawboard, plasterboard, roofing paper, insulating or wall board.

(b)—Mills solely engaged in paper converting, such as finishing, coating or paper goods manufacturing are not eligible.

(c)—Each company operating a paper converting plant in connection with and in close proximity to a pulp, paper or board mill, as defined in Rule 1 (a), may enter both plants jointly as one eligible mill.

(d)—Each company operating two or more eligible plants may enter its mills jointly as one contestant, or each eligible mill may be entered separately.

RULE 2—(a) Contestants shall be divided into three groups, namely:

Group A—Mills employing 501 or more employees
Group B—Mills employing 201 to 500 employees
Group C—Mills employing 20 to 200 employees

(b) A mill to remain eligible must operate a minimum of 70 per cent of the calendar working days in the period of the contest.

RULE 3—Contest shall start January 1, 1928, and end June 30, 1928.

RULE 4—The winner of each group shall receive the National Safety Council Trophy and shall be the mill receiving the greatest total number of **points credit** (or the least total number of points charged in the event there are no mills with credits) during the period of the contest, based on percentage reductions of both frequency and severity, as compared with the 1927 contest average frequency rate of 35.00 and the average severity rate of 1.00.

(A) **Frequency**—5 points shall be **credited** for each 1 per cent reduction as compared with the average frequency rate of 35.00. Likewise, 5 points shall be **charged** for each 1 per cent increase.

(B) **Severity**—1 point shall be **credited** for each 1 per cent reduction as compared with the average severity rate of 1.00. Likewise, 1 point shall be **charged** for each 1 per cent increase.

(Example)—Mill employing 500 men during the contest works 625,000 hours and has 25 lost time accidents causing 150 days lost time, thereby producting Acc. Freq. rate of 40.00 and Acc. Sev. rate of .24.

Freq. rate of 40.00=14.29% **above** average (35.00); therefore, at rate of 5 points for each 1%, the **charge** would be 71.75 points (5x14.29).

Sev. rate of .24=76% **below** average (1.001; therefore, at rate of 1 point for each 1%, the **credit** would be 76.00 points (76x1).

Total points credit=4.25 (76.00—71.75).

RULE 5—In the event that two or more mills in any group have perfect scores, (no lost time accidents during the contest, which is equal to 600 **points credit**) the winner shall be the mill with the perfect record working the greatest number of man-hours during the contest.

RULE 6—A lost time accident shall be any personal injury which comes within the scope of Note 4, on the reverse side of report form furnished to applicants. This is interpreted to mean that **all time shall be counted as lost time until the injured employee returns to his regular occupation.**

RULE 7—All lost time shall be charged to the month in which the accident occurred—See Note 5c, also reverse side of report form. However, corrections may be made in previous reports, when the corrected report has been duly signed by the individual requesting such change and **Countersigned** by an officer of the company.

RULE 8—All contestants shall make monthly reports to the Chicago office of the National Safety Council on forms furnished as per enclosed copy. These reports shall be in accordance with all rules listed and notes on reverse side of report.

RULE 9—Reports must be mailed so they will reach the headquarters office not later than the 15th day of the month following.

RULE 10—Any contestant 30 days or more in arrears with its monthly reports shall automatically be withdrawn from the contest.

RULE 11—Every mill entered in this contest will receive a key number known only to that mill and one member of the headquarters staff, National Safety Council. Monthly ranking of mills will be published on this basis. Final rank numbers will be published with company names at the 17th Annual Safety Congress.

RULE 12—When the winner of each group has been definitely decided, the judges will award by a majority vote to the one of these three, having in their opinion, established the best record based on accident frequency and severity, man-hours worked, physical conditions and any other contributing factor, the grand prize cup donated by THE PAPER INDUSTRY of Chicago.

RULE 13—Final award of all trophies will be made at the 17th Annual Safety Congress.

RULE 14—The judges of this contest shall be:

E. W. Beck, Safety Director, United States Rubber Co., New York City.
E. F. Blank, Safety Director, Jones and Laughlin Steel Co., Pittsburgh, Pa.
W. H. Cameron, Managing Director, National Safety Council, Chicago.
Edward B. Fritz, Publisher, THE PAPER INDUSTRY of Chicago.
G. E. Sanford, General Electric Co., Schenectady, N. Y.

RULE 15—All entries in this contest must be made on the "Official Registration Form" and received **ON** or **BEFORE** January 25, 1928.

Detecting Hot Bearings With Color

By W. F. SCHAPHORST, M. E.

IN THE January 1927 issue of The Paper Industry a short item appeared under my name on this subject. The national Safety News copied this article crediting The Paper Industry, and they have received an inquiry from one of their readers asking what proportion of mercuric iodide and cuprous iodide are mixed to indicate a temperature of 140 degrees F., also whether or not it is possible to make this paint in order to have it indicate a bearing temperature of 150 degrees and 155 degrees F.

The original article was written by an engineer named Hempel and appeared in The Wochenblatt (46, 17, 1915.). Not being able to find a copy of that publication in this country, I learned that an article on the same subject appeared in the Journal of the Society of Chemical Industry and that it was abstracted in The Blast Furnace & Steel Plant. The

following is a portion of the information appearing in the latter publication:

It is obvious that if warning could be given as soon as heating up of bearings occurred, but before it became serious, much trouble and expense could be avoided and the matter could be rectified in time. Double iodides have been found to possess the property of undergoing a reversible transition involving change of color when heated and subsequently cooled. With most of them the change is comparatively slow, and the transition is so gradual and spread over so large a range of temperature as to be unsuitable for the purposes required.

Two compounds were, however, eventually prepared which gave promise of considerable utility. The first of these was the double iodide of silver and mercury, AgI. HgI_2, which is a pale lemon yellow powder at ordinary temperatures, and changes to a vivid carmine color at about 90 degrees—100 degrees C. the change in both directions being fairly sharp. The other was the copper mercuric iodide, $Cu_2I_2Hg_2$, which Tonner described. This substance is a very vivid scarlet vermilion at ordinary temperatures and at 60 degrees—70 degrees C. it changes to a chocolate brown. Both these compounds are adapted for use under suitable conditions, but it was found that a mixture of the two, consisting of 85 per cent of the copper salt and 15 per cent of the silver salt was more sensitive and gave a greater color range from vermilion to almost black, the transition being exceedingly sharp. (Other mixtures were prepared for special conditions, but the above was more generally applicable.)

The compounds may be prepared in a variety of ways, for instance, a very simple method of preparing the copper salt is by well triturating in a mortar 380 grams of cuprous iodide with 910 grams of mercuric iodide, sufficient water being added to form a paste. When thoroughly mixed, the mass is dried in the water oven, and the dried mass ground to an impalpable powder. Another method is to dissolve the mercuric iodide in excess of potassium iodide solution and precipitate the double salt by the addition of copper sulphate solution. The silver salt can be prepared in a similar manner by double precipitation. Whichever method is adopted, the product should be well washed to eliminate soluble impurities, as these appear to retard the color change, as well as to affect its character.

Having prepared the double salts and mixed them in the proper proportion, the means of applying them arises. It has been found convenient to convert them into a varnish-paint or enamel, by incorporating the powder with a colorless varnish medium that will stand moderately high temperatures without softening. A good shellac spirit varnish such as is used on electrical machinery has been found suitable for most occasions, as this will stand a low stoving temperature, but for more elevated temperature, a medium such as is used in the high temperature aluminum paints used for steam pipes, etc., and which will resist temperature up to 200 degrees C. is excellent. About 100 grams of compound to 70 c. c. of medium will be found a mixture of suitable consistency.

A convenient method of applying this heat detector is first to paint a white circle or ring on the bearing or other place which it is desired to keep under observation, using a zinc white paint. This white circle is applied to the journal or housing of the bearing, and the detector paint is applied as a vivid red bull's eye in the middle of this, thus forming a very striking object which is visible from considerable distances. It must of course be applied to the block of metal as near as possible to the point at which the heat is likely to be generated. It is sometimes desirable to apply the paint to the shaft itself, just where it extends beyond the bearing metal, and in this case, a convenient method is to apply a broad band of white paint with a narrower band of the red detector paint in the center. This red band in the center of the white one is then easily seen as the shaft rotates. In any case, after the paint is dry, it should be protected with a coat of colorless oilproof varnish, so that the surface may be occasionally wiped free from dust and dirt.

The visibility of the paint against its white background is very high, the bright scarlet color being visible from long distances without effort, and the change at 60 degrees—70 degrees to black is very easily observed, the visibility of the black on the white ground being very much lower. It is generally easy to arrange matter so that the detector is placed in a position where it is visible almost without conscious effort; and experience has proved that a workman is easily trained to cast his eye occasionally on the detector, while he could not be depended upon to climb up to the spot and feel the bearing on the remote chance of finding it heating up. When the paint changes color, there is certainly something wrong, but taken in time, and that no damage is done, the bearing simply requiring cleaning and adjustment without serious stoppage and expense.

This detector has also been successfully used on a gas engine, one of the main bearings of which was frequently heating up, owing to a slightly distorted shaft, and it was possible to place good big "bull's eyes" upon it, which on many occasions gave warning of impending trouble, enabling the load to be reduced.

The Paper Industry 1927 Safety Contest

Accumulative Severity Rates of Mills in Group C., as of November 30, 1927

Participant	Mill	Rate	Participant	Mill	Rate
International Paper Co.	Riley	0	Group A-Nekoosa-Edwards Paper Co.	Combined Mills	.03
Kimberley-Clark Co.	Neenah	0	Union Bag & Paper Corp.	Cheboygan Paper	.35
Lincoln Pulp & Paper Co.	Lincoln	0	International Paper Co.	Montague	.38
U. S. Gypsum Co.	Gypsum	0	Sorg-Ogelsby-Smith Paper Co.	Sorg	.46
The Upson Co.	Board Mill	.06	Union Bag & Paper Corp.	Allen	.51
Bird & Son, Inc.	Phillipsdale	.08	Sorg-Oglesby-Smith Paper Co.	Smith	.55
International Paper Co.	Winnipiseogee	.09	Lincoln Pulp & Paper Co.	Lybster	.60
Kimberly-Clark Co.	Atlas	.10	Defiance Paper Co.	Mill No. 1	.62
Kimberly-Clark Cp.	Badger-Globe	.10	Union Bag & Paper Corp.	Mill No. 5	.62
Marinette & Menominee Paper Co.	Menominee	.11	Robertson Paper Co.	Montville	.66
International Paper Co.	Webster No. 9	.13	Union Bag & Paper Corp.	Cheboygan Sulphite	.74
The Adams Bag Co.	Chagrin Falls	.14	Itasca Paper Co.	Minnesota	.75
The Gardner & Harvey Co.	Mill No. 1	.17	Union Bag & Paper Corp.	Fenimore Sulphite	.83
Bergstrom Paper Co.	Neenah	.18	Mead Pulp & Paper Co.	Peerless	.99
The Gardner & Harvey Co.	Mill No. 2	.21	Bemis Bros. Bag Co.	Peoria	1.05
The Gardner & Harvey Co.	Mill No. 3	.24	U. S. Gypsum Co.	Oakfield	1.74
Defiance Paper Co.	Mill No. 3	.25	The Northwest Paper Co.	Brainerd	3.12
International Paper Co.	Livermore	.26	Union Bag & Paper Corp.	Fenimore Paper	3.44
Sorg Oglesby-Smith Paper Co.	Oglesby	.31	Lincoln Pulp & Paper Co.	Sulphite	4.15
			The Franklin Board & Paper Co.	Franklin	5.67
			Group B-International Paper Co.	Niagara Falls	.32
Group A—Nekoosa-Edwards Paper Co.	Combined Mills	.03	Group B—International Paper Co.	Niagara Falls	.32

Hammermill's New Laboratory

Complete Illustrated Description of the Chemical Research, Process Control and General Analytical Laboratories Now Housed in One Building on the Grounds of the Hammermill Paper Company, Erie, Pa.

WITHIN a period of a little more than ten years remarkable progress has been made in pulp and paper research work, and in no other large paper manufacturing plant in the world has the development of scientific research on pulp and paper problems proceeded so rapidly and extensively as at the mills of the Hammermill Paper Company in Erie, Pa.

Although a number of the larger concerns in our industry maintain laboratories for controlling manufacturing processes and for fundamental research pertaining to the constitution of cellulose as well as the nature of wood and cooking conditions affecting the character of pulp, not many can show the growth of chemical control that characterizes the activities of the big group of mills on the banks of Lake Erie.

New Laboratory Building of Hammermill Paper Co., Erie, Pa.

Preliminary accounts of the new laboratory building designed for the company's use have appeared from time to time in the columns of THE PAPER INDUSTRY (see our issues for September, 1926, and September, 1927.) But at a recent meeting of three States' sections of the American Chemical Society, M. A. Krimmel, assistant director of the laboratories and research departments of the Hammermill Paper Company, gave an interesting account of the new laboratory building, with lantern slide views of all departments.

Beginnings of the Laboratory

In 1898, the original laboratory building was used as a dining shack, the word "shack" being used advisedly, for it was a simple unpretentious building. When it was decided to establish separate quarters for the chemists and engineers of the mill, the work was directed by E. R. Behrend, founder, president and general manager of the company; for, having a keen appreciation of the value of chemical work, he has always encouraged and supported it. His brother, Dr. Otto F. Behrend, was the first chemist of the plant and has been for many years treasurer of the company.

The successive steps in the building up of a laboratory headquarters are intimately related to the growth of the company's operations. It was early realized that control of the two important processes of acidmaking and cooking required special attention, and additional laboratory room was accordingly set aside in the acid plant for this purpose. Then in 1912 the extent of chemical work being done made it necessary to construct a building to be used exclusively for the laboratory. It was a simple one-story building in which was employed a staff of five people who were engaged mostly on process control, with occasional tests on raw materials and finished products.

Constant Development

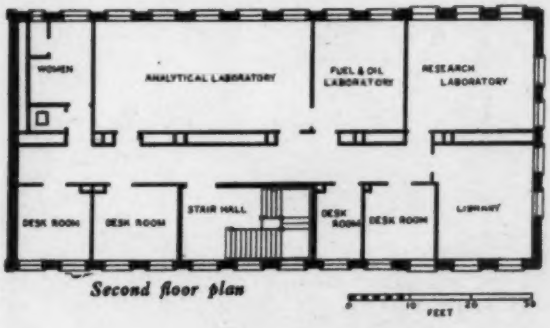
Development went on continuously, new units being added year by year to existing buildings in order to provide adequate quarters for the extension of process control work and analysis of raw materials. In 1917, control tests on paper and dyestuffs were started. At the same time, an experimental laboratory for the production of pulp on a semi-commercial scale and a research laboratory were established in separate places in the mill. These two departments were operated independently of the testing and control laboratory until 1919, when all branches of laboratory work were united under the direction of Dr. Bjarne Johnsen, the present director of the laboratory. The activities of the department of

chemical control and research increased to such an extent that during the period from 1919 to 1925 three more laboratories were provided in different parts of the plant.

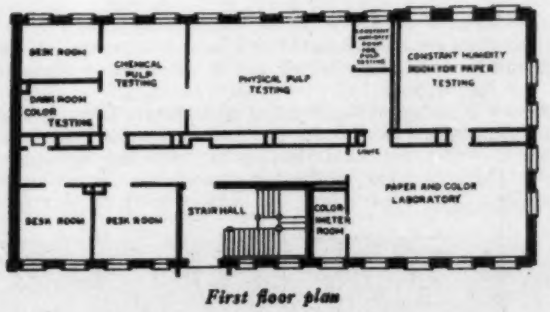
Growth of Laboratories

At this time, in addition to the main laboratory unit, there was a laboratory in the sulphite mill, one in the paper mill, an experimental laboratory, a dry-test laboratory, and a wood-testing laboratory, all included in the laboratories department. The working staff was increased at a corresponding rate with the buildings and forty people were now on the payroll of the department.

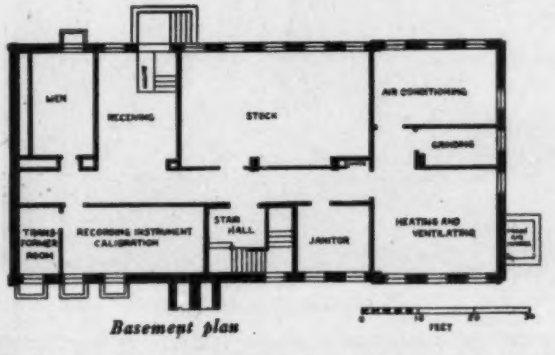
Process control had been extended to every direct manufacturing process as well as to the auxiliary processes—acid-making, and water purification—the result being a complete system of scientific control. Included in this was control of



Second floor plan



First floor plan



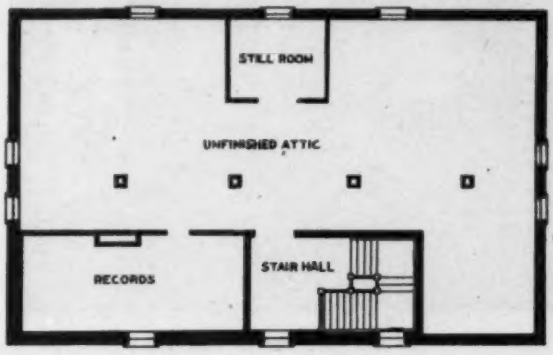
Basement plan

raw materials and coal through complete tests of all shipments. Recording instruments to the number of 125 had been provided everywhere throughout the mill for continuous records of vital data. A large number of different tests were being made on the finished product, paper.

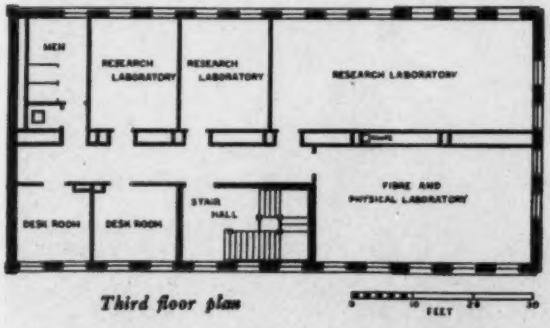
As a consequence of all this expansion along different lines, the need was felt for a separate building to house the various departments and so bring together rather widely separated units that could not be operated otherwise to the highest desired efficiency.

The New Laboratory Building

When confronted with the task of building a new laboratory, it was determined to get the best ideas in laboratory construction by visiting industrial and scholastic laboratories for the incorporation of improved modern features common to all. The rectangular shape of building with central corridor was selected as the most practical. An exterior view of the building is shown in the accompanying reproduction from a photograph.



Attic plan



Third floor plan

The new laboratory building provides almost 16,000 sq. ft. of floor space which is quite impressive when compared with the 720 sq. ft. of the original building in 1912. There are three floors, a basement and an attic; a clearance of 10 ft. 3 in. from floor to ceiling is obtained on all floors except the attic where the height from floor to rafters is 8 ft.

Special Laboratory for Process Control

The operations of process control and paper and dyestuff testing are carried on in special laboratories on the first floor of the new building, there being day and night shifts of chemists constantly at work. One room is set apart for chemical process control tests pertaining to acid, bleaching, and water plants. A dark room is provided for determination of color and dirt of pulp. In another large room, physical tests are made on individual batches of pulp from the digesters as well as on paper machine pulp.

As shown in the illustrations there are special tables in the process control laboratories lower than the standard tables and equipped with special plumbing, having large sinks built especially for physical tests on pulp. Individual motors are provided for each piece of equipment, so that shafts, belts and pulleys are unnecessary.

Part of the paper testing and the work on dyestuffs is done in another large room on this floor. A portion is partitioned off so that it can be darkened for colorimeter work, without interfering with other tests.

Constant Humidity Room

A special room, illustrated herewith, is provided for some of the paper testing. Certain physical tests on paper are

greatly affected by variations in relative humidity. All such tests are made in this room in which a constant relative humidity of 65 per cent at 70° F. is maintained throughout the entire year. This room is well insulated, having 2 in. cork board on outside walls, ceiling and ceiling of room underneath. The central partition of the building furnishes a

Paper and color laboratory

2 ft. 6 in. air space for one inner wall, 6 in. air space being provided for the other. Inside walls are of 4 in. gypsum block. Tests on pulp at constant relative humidity are made in a

Process control laboratory—physical

small and similarly insulated room which is connected to the other with air ducts.

All tests made in the constant humidity room are physical

Fiber and physical laboratory

tests on paper, which accounts for the absence of plumbing fixtures. The tops of tables are of alberene stone and the legs and drawers of wood. Before being tested, all samples of paper are hung on the rack, shown in the background, for two hours to season.

Details of General Analytical Laboratory

In the general analytical laboratory, of which a view is shown, a 10 ft. hood is provided with water, steam, air and drain line at each end. As work expands, another work table similar to the other two will occupy the space where the desks are seen and the 10 ft. hood will serve the three tables. In this picture, a fresh-air duct is seen with deflectors along the ceiling in the background, while part of the foul air duct is shown in the extreme lower right-hand corner of the foreground.

Piping Distribution

This view of the general analytical laboratory also shows the system of piping distribution. The pipes are carried along the ceiling of basement and second floor. The work tables and hoods on the third floor are supplied by pipes

Constant humidity room

carried through the ceiling of the second floor, pipes being carried down from this ceiling to the hoods and work tables on the second floor.

A view is shown of the physical laboratory. The only fixed equipment in this room is the chemical work table in the background. One panel for darkening the room is seen in position. The equipment in the foreground is an experimental machine. The construction and arrangement of this room

General analytical laboratory

permits the installation of almost any type of experimental apparatus for physical work. A floor drain is shown in the foreground. Drains similar to this are provided in every laboratory room as well as in the basement and attic.

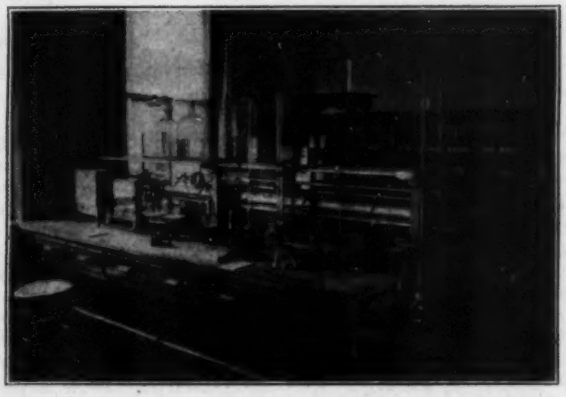
Fiber and Physical Laboratory

The fiber and physical laboratory has a length of 36 ft. and a width of 18 ft.; this provides facilities for photomicrographic work, as the north wall is used as a screen, portable means being provided for each window for darkening the room. With exception of one small table on the south wall, all equipment is portable, thus giving a room in which there is great flexibility so far as equipment is concerned.

Large Research Laboratory

The large research laboratory on the third floor is shown in the accompanying photograph. This demonstrates an idea which has been carried out through the entire building wherever possible—that of having the tables run perpendicularly to the wall, with a 5 ft. hood directly opposite the sink on the inner wall. By this arrangement the fullest amount of light and accessibility to sink and hood are obtained from both sides of the table.

Each table is equipped with hot and cold water, steam, gas, compressed air, and electricity, accessible from both sides. Under each table a control valve is provided for the separate



Process control laboratory—chemical

pipings. There is a 5 ft. space between tables and 4 ft. between sink and hood. Distilled water is carried to each laboratory room to the tables through a block tin line from the still room in the attic. The block tin line is carried in conduit piping along with other piping distribution. The tables were constructed by the Wiese Laboratory Furniture Company, according to designs of the Hammermill Paper Company's laboratory staff.

Equipment of Hoods.

A view of the hoods is reproduced. Built of alberene stone these hoods are almost exact duplicates of those at Baker

Large research laboratory

Laboratory at Cornell University. Each hood is equipped with gas, water, steam, air, electricity, drain, and remote control for fans. The opening in the back of these hoods is 3 ft. 2 in. x 8 in., which is smaller than that in the "Cornell" hood. Each hood has its own fan with rubber-lined blades and fan housing. Ducts from hoods to fan on attic floor are 8 in. x 8 in. and constructed of tile to attic floor, but of galvanized iron from floor level to fan.

In the picture of the research laboratory some of the small scale experimental equipment is shown. Piping has been roughed in for standard laboratory work tables.

Laboratories on Every Floor

As shown in the accompanying floor plans, there are laboratories on every floor except in the basement and attic. The general analytical laboratory, adjoining fuel and oil laboratory, a private research laboratory, library and offices, are housed on the second floor, while the third floor contains two small research laboratories, one large research laboratory, the fiber and physical laboratory and rooms for clerical work.

On all three floors and basement, there is a 6 ft. corridor,

Smoke and fume hoods

with offices and desk rooms always on the west side and laboratories on the east side. By this arrangement which allows 12 ft. for the west side and 18 ft. for the east side, it

Small research laboratory

was possible to reduce the depth of the building 6 ft. and greatly simplify the piping system, with a corresponding economy of construction cost. At the south end of each floor,

Fuel and oil laboratory

the 6 ft. corridor space has been used to form an 18 ft. room.

In the attic are located a record room for storage of reports and a distillation chamber or still room, the last named accommodating a still and a 100-gallon block-tin-lined supply tank. Hood fans and motors are placed in the attic with remote control on the hoods, and there is ample storage space. Part of the space has been reserved for wood testing and wood preparing equipment.

Basement Plan

The plan of the basement is illustrated herewith. Steam, water, gas, and electricity are brought into the building through a tunnel from the mill power plant. Control valves, regulators, transformers and electric panels are located in the transformer room from which the pipes and conduits are carried vertically through a pipe chase along the north wall and horizontally along the ceiling of the basement and second floors. There is an opening to this pipe chase from each floor. Wherever pipes pass through floors, sleeves have been provided to prevent damage due to expansion and contraction and to facilitate the making of repairs when necessary. T's instead of elbows have been inserted at frequent intervals to permit expansion of piping system. An opening 4 in. x 4 in. through all floors in the center of the building along the east wall is provided also for future piping.

Instruments Calibrated in Basement

A large room with area windows is provided for maintenance and calibration of recording instruments used throughout the plant for recording pressures, temperatures, speed, etc., of process operations.

In the janitor's room there are steel cupboards for general supplies, such as stationery, report forms, soap, etc. Facilities for cleaning apparatus are provided.

Heating and Ventilating

The heating and ventilating system is located in the south end. All rooms with the exception of the constant humidity room, those in the basement and attic, and the stair halls are indirectly heated. Basement, attic, and stair halls are heated by direct radiation. This system was designed to take the burden from the indirect system during extremely cold weather, to reduce the capacity of the indirect system, and to act as an emergency agent to prevent annoyances should the indirect system fail at any time.

Indirect Heating Equipment

The indirect system consists of two Aerofin heaters, Midwest filters, and a Buffalo conoidal fan with Johnson Service regulators, attached to steam lines and air dampers. Incoming air is tempered, filtered, heated and then blown into a plenum chamber which runs along the basement ceiling. From there it is distributed through ducts located in the center partition to the various rooms, each having an individual fresh air duct and foul air duct. Foul air ducts are also carried through center partition to ventilators on roof. In warm weather the system is operated without heat, so that the rooms are always supplied with clean air, thus permitting the windows to be used for light only.

In this part of the building are placed an air compressor, hot water heater and condensate pump, all automatically operated.

A grinding room was provided to confine all dust-producing operations to one place, removed as far as possible from anything that might be affected.

The Humidifying System

Apparatus for maintaining a condition of constant relative humidity and temperature is placed directly under the constant humidity room. It consists of a Carrier Engineering Corporation humidifying system which with the aid of a 4-ton York Company ice machine, becomes a de-humidifying system as well.

The stock room occupies a large part of the basement, It is enclosed by a wire partition. The arrangement of the steel shelving made it very simple to set off a part as a reserve stock room.

A men's room with showers, completes the basement. There is a ladies' room on the second floor and a men's room on the third, both occupying similar positions in the building as the toilet room on the basement floor. Slop sink rooms with ample space for brooms, mops, pails, etc., are located on the first, second and third floors. A refuse chute extends from basement to attic, with openings on each floor.

Still Expanding

Expansion is still the order of the day at Hammermill and in planning the new laboratory building provision was made for further development. The first step in the expansion program will be the addition of a unit on the north end corresponding to the wing on the south, which will provide quarters for a semi-commercial equipment now located in the mill, and further development from this point will logically be the erection of a unit for an experimental paper machine in size equivalent to the present building. This addition will make the whole project L-shaped. With this in view, the present building has been set back as far as possible so that the paper machine unit could be added without shutting off light and yet providing sufficient length for a unit of this sort.

It remains to say that the building was designed by F. J. & W. A. Kidd, of Buffalo, N. Y., and built by the Henry Shenk Company, of Erie.

Senate Committee Favors $40,000,000 for National Forest Extension

A favorable report on the McNary-Woodruff bill, S. 1181, providing for Federal expenditures of $40,000,000 for the acquisition of forest lands was voted by the Senate Committee on Agriculture and Forestry January 5th, following brief hearings in which lumbermen, foresters and others urged the early passage of the measure. The Committee also voted to report the bill with an amendment making the total appropriation available for an eight-year program, instead of a ten-year program as originally provided, $1,000,000 of which is to become available immediately upon enactment.

Col. W. B. Greeley, Chief U. S. Forester, explained that the bill contemplated the purchase of 4,000,000 acres at the headwaters of navigable streams, two and one-half million acres in the Lake States and a like amount in the Southern pine region. He estimated the lands in the Lake States and in the South together would cost approximately $15,000,000, while the 4,000,000 acres would cost $25,000,000.

John W. Blodgett, of Grand Rapids, Michigan, former president of the National Lumber Manufacturers Association, said he felt that reforestation largely was a matter for the Federal Government and the States. In reply to inquiry from Senator Norbeck as to whether he thought the ten-year program was "fast enough," Mr. Blodgett said he did not think it was, but that it was a step in the right direction and "possibly as fast as public sentiment would permit."

Speedier action also was urged by R. S. Kellogg, chairman of the National Forestry Program Committee, and John S. Holmes, of the Southern Forestry Congress. Mr. Kellogg said that while private timber land owners had made remarkable progress in the matter of reforestation, private capital should not be expected, under present circumstances in the various States, to grow trees that require a century to mature. He said that was a matter for public enterprise. Because of the delay in passing this measure, he added, the Nation has lost many years in growth of timber.

Mr. Kellogg stated emphatically that the McNary-Woodruff bill was a necessary step in the perpetuation of our forest resources and until it was enacted by Congress, those interested in its passage would appear and reappear before the Senate Committee. He said the policy embodied in the bill was first advocated in 1900 and that it was time action should be taken.

Others who appeared before the Committee included R. Y. Stewart, of the Society of American Foresters; George D. Pratt, president of the American Forestry Association; L. W. Wallace, secretary of the American Engineering Council, and Shirley Allen, of the American Forestry Association, speaking on behalf of the General Federation of Women's Clubs.

Future Safety Meetings

Dates have been definitely set for the following safety conferences: the 5th Annual Midwest Safety Conference will be held in Chicago, March 18, 1928; Michigan State Safety Conference, Lansing, Michigan, April 11, 12 and 13, 1928; the 4th Annual Fox River Valley Safety Conference, Oshkosh, Wis., June 6, 1928.

Longview Fibre Company Power Plant

Hog Fuel Fired Boilers for Power Generation and Waste Heat Boilers for Recovery Process

THE Longview Fibre Company's $3,000,000 pulp and paper plant on the Columbia River waterfront, at Longview, Wash., started to make pulp and board last October, which was three months sooner than officials anticipated when construction started. The capacity of 120 tons of pulp and 120 tons of pulp products is almost double that contemplated in the original plans. The plant will operate three shifts daily, six days a week and employing between 300 and 400 men.

The principal raw material for the plant will be Douglas fir wood waste which is supplied from the manufacturing operations of the Long-Bell Lumber Company. Water is drawn from the Columbia River at the rate of 10,000,000 gallons daily.

The Longview Fibre Company embodies essentially a sulphate pulp mill and a board mill of sufficient size to use the product of the former. The more important equipment in each of these departments is as follows:

Pulp and Board Mill Equipment—Four 2,600 cubic foot capacity digesters, manufactured by the Blaw-Knox Company, Pittsburgh, will produce about five tons of stock per cook. There are fourteen 2,600 cubic foot capacity riveted, diffusers arranged in two circular groups of seven each and ten 15,000 gallon causticizing tanks, furnished by King Boiler Works, Portland, Ore., with attendant liquor storage facilities. The recovery equipment is mentioned in subsequent paragraphs.

Included in the machine room proper is the pulp screen room, consisting of four Impco knotters, four Bird centrifugal screens, five Impco deckers, and a Biffar screenings refiner. This machinery is all situated directly above the stock chests. The board machine is served by five Shartle Miami jordans and four Jones beaters. The board machine is of the stack dryer type, manufactured by the Black-Clawson Company. It trims 133 inches and has six cylinders. A 172-inch Yankee machine, built by the Beloit Iron Works will be in operation by March first, 1928.

Boiler House and Recovery

The boiler house serving the equipment above mentioned contains 4,200 installed boiler horsepower, consisting of three 827 b. h. p. hog fuel fired boilers and three 567 b. h. p. waste heat boilers.

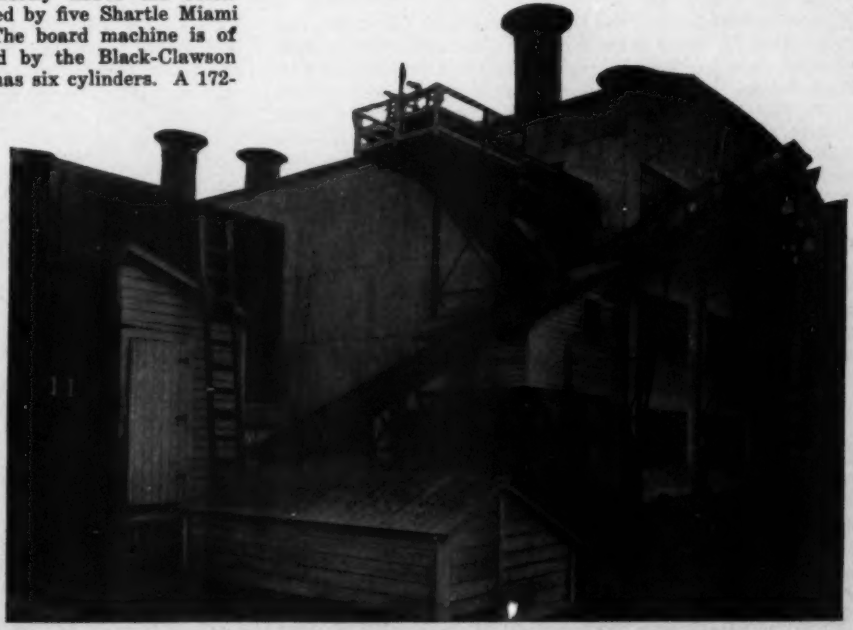
The hog fuel fired boilers are Babcock & Wilcox Stirlings, furnished by C. C. Moore & Co., Engineers, of San Francisco. They are equipped with Beecher step grates for burning hog fuel, as well as back shot oil burners for auxiliary use. Of particular interest are the settings for these boilers, they being entirely of hollow wall, suspended type construction. The material for the settings was furnished by the M. H. Detrick Company of Chicago and the Harbison-Walker Company of Pittsburgh. These boilers are capable of operating at a sustained rating of 200 per cent with maximum short time peaks of 225 per cent when fired with hog fuel of 40 to 50 per cent moisture.

The main boiler auxiliaries consist of two De Laval, 100 h. p. turbines directly connected to Byron-Jackson three-stage boiler feed pumps. These are equipped with Copes pressure regulators and are connected to the boilers through Copes water level regulators. A Cochrane hot process water softener with a Cochrane closed feed water heater complete the feed water system.

A complete installation of recording and indicating meters has been made. Brown Instrument meters to measure steam flow, water flow, temperature and pressure have been provided. Ellison double-tube draft gauges to measure the draft resistance through the boiler are used.

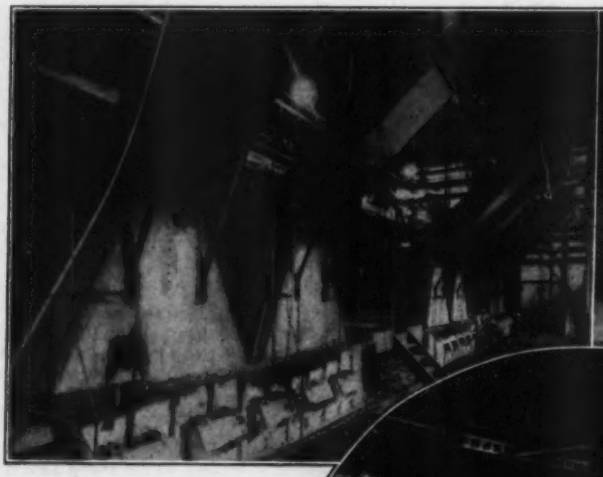
Of special interest is the hog fuel handling system. Thirty specially designed cars have been constructed, which hold nineteen units of 200 cubic feet each. Six doors are provided on each side of the car which facilitate unloading. The hog fuel, loaded at the Long-Bell Lumber Company, is switched to the Fibre Company, and the cars are then spotted over a track hopper where they are unloaded. An incline conveyor, furnished by the Steel Tank & Pipe Co. of Portland, the design and mechanical parts of which were furnished by the Link-Belt Co., Chicago, carries the fuel to the main distribution conveyor where it is apportioned to the boilers.

The waste heat boilers are also of the Babcock & Wilcox Stirling type, furnished by C. C. Moore & Company. They are connected by a short neck to the smelters. The smelters



Exterior side view of Longview Fibre Company's power plant showing incline conveyor taking hog fuel to the boilers. Design and mechanical parts of conveyor furnished by the Link-Belt Co.

are new in design, being 9 feet inside diameter and 30 feet high. They are constructed of chrome tile, suspended by cast iron brackets of Detrick design, the brackets all being supported from a steel structure. The walls are in sections 2 feet 6 inches high, with expansion joints between each section, and are so arranged that the maximum load at any one point can only be that imposed by the 2'6" section itself.



Front view of hog fuel fired boilers in power plant of Longview Fibre Co.

The arch over the smelter is made of suspended soapstone blocks and is entirely independent of the side walls. Circulating air through the hollow side walls of the smelter is supplied by a Buffalo Forge fan. This air is, after being preheated in the hollow walls, used for combustion air in the upper zones of the furnace. Blast air for the nozzles, of which there are four is supplied by a high pressure Buffalo Forge blower delivering 2000 c. f. m. at one pound pressure.

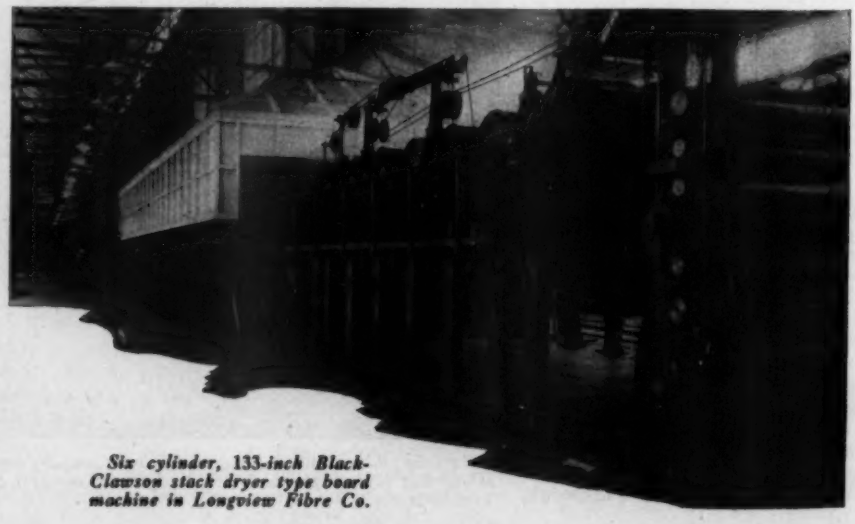
The fuel for the smelters consists entirely of black liquor concentrated to approximately 5 per cent solids (25 per cent water.) This together with the necessary make-up salt cake is introduced through a specially designed nozzle.

The evaporator serving the furnaces is a five effect vacuum evaporator directly connected to a double effect pressure evaporator. Steam is introduced into the high pressure effect at 190 lbs. pressure, and the pressure is then stepped down through the successive effects to 25 inches of vacuum. This system is entirely closed, in that all the non-condensable gases driven off during the evaporation are collected and taken to the smelters, where they are burned. The gas destructively distilled from the concentrated black liquor in burning, all passes through the hottest zone of the furnace, where it is completely burned. Thus, the usual obnoxious odors which arise from the recovery in the older type sulphate mill are destroyed. The system was designed by Peebles Processes, Inc., of San Francisco, and the material was furnished by King Brothers Boiler Works and Tennant Steel Casting Co., Tacoma, tubes in the evaporators furnished by the Globe Steel Tubes Co., Milwaukee.

Rear view of B .& W. hog fuel fired boilers in Longview plant, showing equipment for oil burning

Front view of B. & W. Stirling boilers in Longview plant, showing feed water regulators, flow meters, circulating fans and draft gauges

The Longview Fibre Company will derive its electrical energy from two sources, namely, its own generating plant and the generating plant of the Long-Bell Lumber Company. The two systems are interconnected electrically and operate in parallel. From the power house of the Long-Bell Lumber Company to one of their outlying substations, the transmission line consists of three conductor, lead sheath cables, laid in underground ducts. As far as this, substation power for the Longview Fibre Company may be delivered over any one of three such underground cables. At the substation, the three cables unite through a selective switching arrangement to a single overhead transmission line which enters the property of the Longview Fibre Company and



Six cylinder, 133-inch Black-Clawson stack dryer type board machine in Longview Fibre Co.

terminates at an outdoor transformer station. This station which is adjacent to the paper mill, consists of three 1000 k. v. a., 13200/480 volt transformers, and delivers current directly to the main bus in the mill under a potential of 480 volts. The two power houses mentioned, those of the Long-Bell Lumber Company and the Longview Fibre Company, are approximately one mile apart, half of that distance being covered by the underground transmission line. Protection for the equipment in both stations is derived from the usual installation of overhead relays, Schweitzer & Conrad high potential fuses, reverse power relays and lightning arresters.

In the power house of the Longview Fibre Company is installed one turbo-generator set consisting of a 2500 k. w., 3600 r. p. m., extraction type turbine of the latest design, manufactured by the General Electric Company, and a 3125 k. v. a., 3600 r. p. m., 480 volt generator directly connected to the turbine, and also of General Electric manufacture. Space is also provided in the turbine room for the addition of another turbo-generator of equivalent or greater capacity than that of the present one, in case the future requirements demand it. The generator feeds into one main bus in parallel with the Long-Bell Lumber Company's connection.

Located also in the turbine room is the main switch room and distribution center, which consists of the various oil circuit breakers remotely controlled from the switchboard on the floor above. Various departments of the mill are supplied with power through their individual feeders.

The distribution centers in the various mill departments are unique in design, inasmuch as they present an absolutely safe dead front, are of smooth box-like construction (the only protruding parts being the front operated switch handles) and house the distribution bus, the disconnect switches, fuses and magnetic contactors. All wires enter and leave the centers in rigid conduit at the back. The entire center is as nearly waterproof as is possible to make it and still keep the inside accessible through hinged doors. Another interesting feature of these distribution centers is that each switch is equipped with special testing recepticals, making it possible to insert current transformers in any motor circuit for the purpose of making power measurements without shutting down the motor. These centers were built by the A. G. Manufacturing Co., Seattle, Wash.

Nearly 250 motors are installed, or are being installed throughout the plant, ranging in size from ¼ h. p. to 450 h. p. The total connected load is approximately 7500 rated horsepower. Of this 7500 connected horsepower, 2500 is in synchronous capacity. All motors were furnished by the

Westinghouse 2500 square foot surface condenser and circulating pump in Longview Fibre Co.

General Electric Company with the exception of the one used on the condenser circulating pump shown in the illustration.

Of special mention is the general type of illumination throughout the plant. In the more important work places, an average intensity of illumination of 14-foot candles at the working plane is maintained. Nearly one watt of energy for every square foot of floor space is used for lighting purposes. The machine room has exceptionally even light distribution which is obtained through the use of Ivanhoe glassteel diffusing units, mounted approximately 20 feet above the floor and spaced 18 feet apart each way. Each unit is of 500 watt capacity. Throughout nearly all the remainder of the mill, vapor proof units are used. This type of unit was selected to combat against the corrosive effect of the fumes from the cooking liquors and also from the moisture.

Throughout the entire installation, all exposed pieces of copper have been protected from the effect of fumes by

General Electric Co., bleeder type turbine, 2500 k. w. capacity in Longview plant, showing 3-arm mechanism which controls grid valve furnishing proper amount of extracted steam

a coating of clear lacquer followed by a heavy application of vaseline. On contact surfaces, vaseline only was used. All of the magnetic contactors are cadmium plated, which is also a protection against the fumes.

Brown Paper Completes Expansion Program

The Brown Paper Mill Company, Inc., of Monroe, La., has completed its expansion program and started the new 176" Pusey & Jones machine. This machine is of the most modern high speed type, with General Electric sectional machine drive, removable fourdrinier, suction couch and first press, with complete Nash vacuum pump equipment, 46-60" paper dryers, 6-48" felt dryers, copper jacketed receiver or baby dryer, double stack of Farrell calenders, Langston slitter and winder, Fulton drying system and complete Ross system of heating and ventilation.

In addition to the paper machine, the new equipment consists of a 7,500 k. v. a. General Electric turbo generator unit with accessories, three Wagner recovery units, three 1,350 cu. ft. Kellogg tumbling digesters with battery of diffusers, three Bird centrifugal pulp screens, six Mount lime mud filters, Trimbey metering system, six No. 3 Shartle jordans, a Shartle beater for shredding and pulping laps, two triple effect Zaremba evaporators and a complete system of overhead electric trolleys for handling the reels and heavy rolls from the new machine.

The additions were planned by Geo. F. Hardy, as was the original unit. The new buildings and additions were erected by The Morton C. Tuttle Co. of Boston. The piping by The Grinnell Co. The pumps, with their direct-connected motors, were furnished by The Fairbanks-Morse Co. In connection with the Wagner recovery units are three 500 h. p. Wickes vertical tube waste heat boilers with super-heaters. All the tank work, as well as a new bark burner, was built and erected by Walsh & Weidener of Chattanooga.

This mill is a completely self contained unit, owning and operating its own forests, which are so extensive that the annual growth is greater than the annual cutting. These forests are connected with the mill by the mill's own railroad and the wood handled by their own equipment of locomotives and other rolling stock. The water supply is from artesian wells on the mill property.

Madawaska Mill of Fraser Paper, Ltd.

Extensions in Progress in This Modern Paper Mill Connected by Pipe Line to Canadian Pulp Mill

By RUFUS J. KING
Secretary, Management Engineering & Development Co.,
Dayton, O.

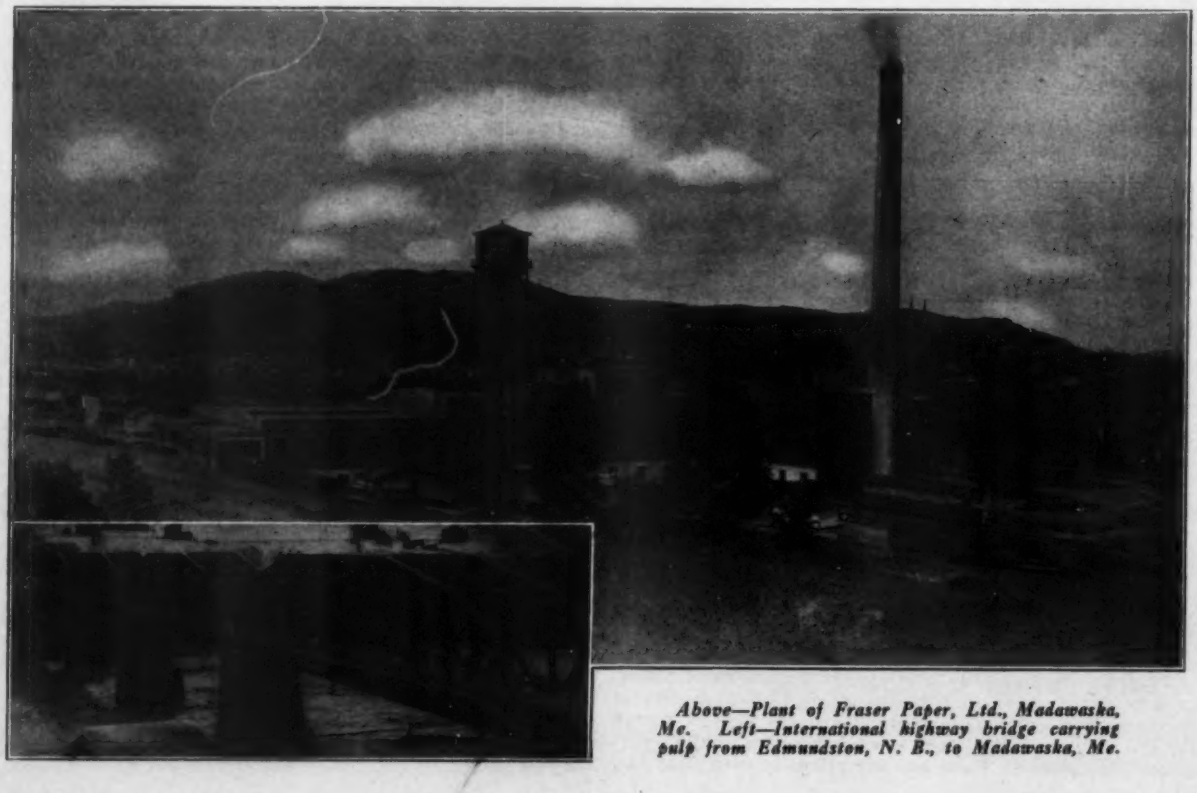
ONE of the most modern fine paper mills in the United States is that of Fraser Paper, Ltd., located at Madawaska, Me. Because of its unusual location with reference to the pulp mill, also to the fact that this plant is now being enlarged to double its capacity, a description will be of interest to engineers and officials.

For perhaps ten years, Fraser Companies, Ltd., have, in addition to their large lumber activities, been operating two pulp mills; one at Chatham, New Brunswick, with an output of 20 tons per day, and the other at Edmundston, New Brunswick, this mill having a capacity of 175 tons of high grade bleached sulphite pulp. The town of Edmunston is located on the St. John River opposite the most northerly point of the Maine boundary, and the pulp mill is situated about a mile from the St. John on the Madawaska, a small tributary.

The pulp of this latter mill was formerly sold in dry rolls, mostly in the United States markets. Early in 1925, the Fraser Companies became interested in the possibility of constructing a paper mill, and engaged the services of The Management Engineering and Development Company of Dayton, Ohio, which after making a study of the conditions, recommended that a paper mill be built on the opposite side of the river in the State of Maine, this location for several reasons being the most desirable. Their plan was adopted, a new company, Fraser Paper, Ltd., was organized, and actual construction work on the first unit was started on May 1st, 1925. This unit consisted of two paper machines, the first of which was put in operation early in November, and the second in December of the same year.

Wood Pipe Line Connecting Pulp and Paper Mills

To eliminate the expense of drying pulp and to avoid the inevitable deterioration in quality and cleanliness which follows drying, the pulp mill and new paper mill were connected by a pipe line so that the pulp might be pumped from the one mill to the other. This line consists of a 17" continuous wood stave pipe about 5,000 feet long, buried in the ground, except for the length which is suspended on the International Highway Bridge where it is exposed for 1,000 feet. The amount of pulp desired at the paper mill is diverted to thickeners where the consistency is increased to about 0.8 per cent and delivered to the pump which forces it across the river to Madawaska. Since the two mills are at approximately the same elevation, the discharge end of this pipe line is only about 40 feet above the pump, and the total head is less than 20 pounds. During the first winter of operation, records were kept of the temperature of the pulp entering and leaving the pipe line to determine the effect of extremely low temperature on the exposed portion of the line. Continued observation established the fact that the pulp temperature was actually



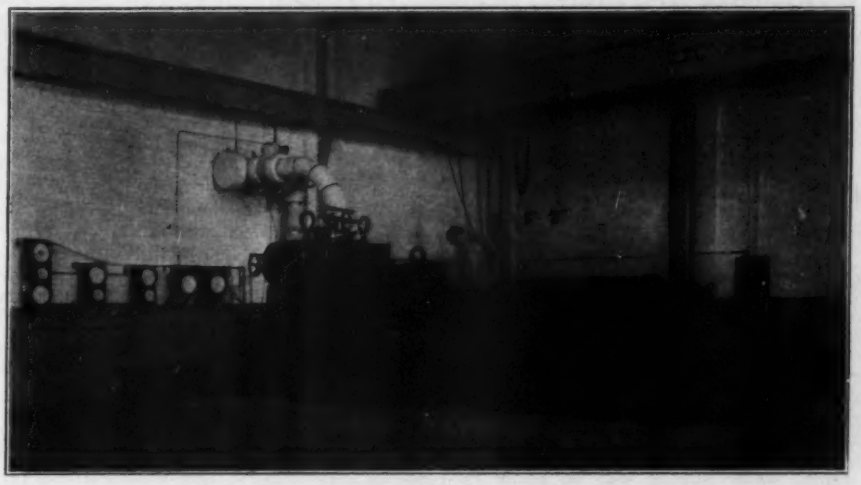
Above—Plant of Fraser Paper, Ltd., Madawaska, Me. Left—International highway bridge carrying pulp from Edmundston, N. B., to Madawaska, Me.

increased one or two degrees, due, no doubt, to the relatively high temperature of the soil surrounding the buried portion of the tube.

Beater and Machine Rooms

The slush pulp, on arriving at the paper mill, is discharged into thickeners on the third floor of the beater room where the consistency is increased to about seven or eight per cent; the thickeners discharge into concrete chests suspended over the beaters. The third floor of the beater room also provides space for all the equipment necessary for preparing solutions of size, color, and alum which, as well as the pulp, are discharged by gravity into the beater tubs. The main floor of the beater room contains eight high speed beaters, four for each machine, in which the pulp is treated in high consistency and discharged by gravity in the storage tanks below. From these tanks the pulp, after thinning to about four per cent, is pumped to the machine room where, after a further treatment with jordans, it is ready for the paper machines.

The machine room houses two 166" machines manufactured by the Pusey & Jones Corporation. They are substantially identical except that one of them is equipped with a pick-up felt for use in the manufacture of extremely light weight waxing papers. They consist, essentially, of Voith slice, horizontal wire table, suction couch and first press followed by two standard stone presses, smoothing press, twenty-six 60" dryers, two stacks of calenders, uniform speed reel, and Cameron winder. All sections of the machines are driven by Harland electric sectional drive. The basement contains the necessary auxiliary equipment, including pumping units for air, water, and stock, and the



Westinghouse turbo-generator set in Madawaska mill

Two 166-inch Pusey & Jones fourdrinier paper machines in Madawaska mill

motor generator sets and switching apparatus for the machine drives. At the dry end of the basement, each machine is provided with a broke beater where, after disintegration, the pulp is discharged into a small pit. These pits are equipped with plunger stock pumps and the stock, by means of them, is slowly and continuously returned to the pulp system at a uniform rate. This arrangement has proved to be a decided improvement over the usual method of sending the broke back intermittently.

Throughout the mill the utmost precautions have been taken to maintain the high standard of cleanliness which is characteristic of the pulp manufactured at Edmunston. Throughout the process the pulp does not come in contact with steel at any point. The tanks are of wood, and all of the piping for both pulp and white water is of copper. Where the use of concrete was absolutely necessary, particular pains were taken with the finish so that there would be no possibility of dirt from this source. Pumps were selected, keeping this same idea of cleanliness in mind.

After leaving the winder, the paper is delivered to the finishing room, and is prepared for shipment in rolls or in sheets as the case may be. The finishing room is a large, well lighted building of two stories and contains all the necessary equipment for the preparation of sheets for the market.

The Power Plant

At the time the mill was constructed, there was no power available from outside sources, and it was necessary for the company to construct its own power plant. This is composed of two Badenbausen boilers with integral economizers, having a total heating surface of about 7,000 square feet each. They are erected over Combustion Engineering water wall furnaces, and the capacity is such that one boiler will, in emergencies, operate the entire plant. The coal is fired, after pulverizing, through the Lopulco storage system, which has proved to be extremely successful in this plant. The arrangements for handling of coal and for the disposal of ash are very well arranged, and the absence of the usual labor force is very marked. In the turbine room, the equipment consists of one 3000 k. v. a. turbine generator of the extraction type, this unit supplying all power and low pressure steam needed in the process. Due partly to the unusually high efficiencies obtained in the power plant, partly to the design of the machines, and to the highly satisfactory performance of the Briner economizers, the coal consumption of the mill is extremely low. It varies with the season, but the annual average while burning Nova Scotia coal of not particularly good quality, is somewhat less than 75 pounds per hundred pounds of paper, including electric power.

Water Supply

The St. John River affords an excellent source of almost perfect manufacturing water, practically free from hardness and clear and clean and cool at all times. Unfortunately, the level of the water in the river varies over a range of over 30 feet, and it was necessary that the pump house be arranged to take care of this extreme variation. To do this, the pump house was designed in the form of a vertical cylinder of

concrete capable of withstanding the high pressure developed during the high water periods. Three fresh water pumps are installed at the base of the house over a clear well, all of them discharging into a common supply pipe which provides water for the condenser and for the small amount of fresh water used on the machine. The amount required in manufacturing is not very great since the white water is all treated for the removal of pulp, the clear effluent being returned to the system and the pulp returned to the paper machines. Losses in the white water are remarkably small, less than 102 pounds of pulp being used in the manufacturing of 100 pounds of paper.

The Madawaska Mill produces from 80 to 90 tons of fine water marked bond and a beautiful sheet of waxing in almost all weights. The unusual high quality of these papers is attributed to the high standard of excellence maintained in the sulphite pulp mill followed by equal attention to quality in the paper mill operation where it is made possible by the attention given this feature when the mill was designed.

Extensions in Progress

During about eighteen months' operation, results have been so satisfactory that Fraser Paper, Ltd., has decided to install additional equipment. The work on the extensions was started by The Management Engineering and Development Company in July of 1927, and it is expected that No. 3 machine will be in operation this month, and No. 4 machine shortly thereafter. The general arrangement of the second unit is very similar to the first one except that the machines will be larger, No. 3 being 202 inches and No. 4, 192 inches. The additional power required will be obtained from one additional boiler and a second turbine generator. Additional water supply will be taken care of by installing another pump in the river pump house. At the pulp mill, additional pumping and other equipment will be installed to take care of the increased demand for pulp, but the pipe line is of sufficient capacity for the four machines without enlargement.

The buildings housing this mill are of splendid design and construction and are composed entirely of concrete, steel, and brick. Tapestry brick are used on the exposed surface of the walls, giving the mill a very pleasing appearance. All of the roofs are of gypsum, and this fire-resisting construction throughout is thoroughly protected by an automatic sprinkler system.

All of the equipment entering into the design of this unit was selected on account of high efficiency rather than first cost and the results have fully justified this policy of selection. Goulds Pumps are used throughout.

The paper mill is operated by Mr. James McGinley, general superintendent, Mr. Archibald Fraser, president, and Mr. A. W. Brebner is general manager.

Hinde & Dauch Acquires Seven More Plants

A persistent rumor of prospective expansion of a local industry was confirmed by President Sidney Frohman of the Hinde & Dauch Paper Co., Sandusky, O. who announced in the January 4 issue of the Sandusky Register the successful conclusion of negotiations which his company had been conducting, during the past year, for the acquisition of seven additional plants in the East, the Middle West and Canada.

The plants thus added to the present Hinde & Dauch properties are those of the J. M. Raffel Co. at Baltimore, Md.; the Thompson & Norris Co., with factories in Brooklyn, New York, Boston, Massachusetts, Toronto, Ont. and Montreal, Que., and a large straw paper mill and box factory at Brookville, Ind. Title to these properties passes to Hinde & Dauch interests during the month of January.

The acquisition of these added facilities extends the operations of the Hinde & Dauch interests from the Missouri River to Boston Bay, the Chesapeake and the St. Lawrence, and will increase the output of H. & D. manufactured products by fully 30 per cent. As a result of this purchase, the Hinde & Dauch interests now have box factories located at Boston, Brooklyn, Philadelphia, Baltimore, Montreal and Toronto, Canada, Cleveland and Sandusky, O., Muncie, Ind. and Kansas City, Kan. These plants will be supplied by the company's paper mills situated at Gloucester, N. J., Watertown, N. Y., Toronto and Trenton, Ont., Sandusky and Delphos, O., Muncie and Brookville, Ind., and Fort Madison, Ia. With the addition of the company's material-grading plant in Philadelphia, H. & D. facilities now include twenty-eight distinct manufacturing units, situated in the nine states and two Canadian provinces which comprise the industrial section of North America.

The Thompson & Norris Co., now to be merged with the Hinde & Dauch interests, is one of the oldest concerns in the fiber board industry. Before the introduction of the corrugated fiber freight shipping box by the Hinde & Dauch Paper Co. in 1905 and 1906, Thompson & Norris were box makers of reputation and long standing. Taking up the new corrugated freight container, they joined with the Hinde & Dauch concern and others in the pioneer work which finally resulted in the general recognition of the corrugated fiber package by shippers and carriers alike. The present Thompson and Norris Co. enjoys a well-earned reputation as a substantial and reliable concern whose traditions are in line with those of the Hinde & Dauch organization and whose large circle of friends and patrons will impart added strength to the consolidation.

The J. M. Raffel Co. also has acquired an excellent reputation and a large and growing trade. Its management has been sound and progressive and is to be retained in active conduct of the business. A very large part of the trade heretofore served by the Hinde & Dauch Paper Co. is in the North Atlantic States where the plants of those two companies will function to the great advantage of all concerned.

Beginning business forty years ago, in a small rented paper mill, the Hinde & Dauch Paper Co. has grown steadily to its present international proportions. At its inception its founders adopted a sound financial policy which, coupled with the tireless energy which actuated them, and which inspired their entire organization, laid the foundation for after development which has kept the Hinde & Dauch Paper Co. at the head of the corrugated fiber industry.

In commenting upon the matter, Mr. Frohman attributed the continued growth of the company very largely to the building of an organization of specialists, expert in their respective lines, trained in team work and imbued with that rare combination of conservatism and enthusiastic energy which makes progress steady and sure. The company has aimed at symmetrical development from the first rather than at rapid growth. He believed that thorough co-ordination, driving energy and accurate balancing of finance, production and distribution effort are essential in any successful industrial enterprise.

Mr. Frohman mentioned Vice-Presidents Russell K. Ramsey and J. H. Macleod as having been actively instrumental in perfecting the plan under which the acquisition of the additional plants by the Hinde & Dauch Paper Co. has been effected. He also spoke of other members of the Hinde & Dauch organization who are depended upon to perfect details of operation under the merger.

T. S. Estabrook

T. S. Estabrook, vice-president and general manager of the Cornell Wood Products Co., Cornell, Wis., died December 23, 1927.

Mr. Estabrook was born at Sackville, New Brunswick, Canada. He was recognized as a successful mill executive. For many years he was associated with the Chicago Mill and Lumber Company and was manager of the Fibre Products Division of the company. In 1926 he resigned and became associated with the Cornell Wood Products Company.

He was endeared to all his associates because of his fine character; his company will feel the loss of a comrade as well as an executive of great ability. He is survived by his widow and a daughter, his mother, two brothers and one sister.

The funeral services were held on Wednesday, December 28th, conducted by the Rev. F. R. Godolphin of the Grace Episcopal Church, Oak Park, Ill.

New Features in Mechanical Design

Description of Some of the New Developments in Pulp and Paper Mill Equipment

Device to Save Electricity

AUTOMATIC controlling and limiting the power demands or peak loads on electric power systems for consumers, is the function of a patented electrical device known as the Edmore Power Demand Limitator, manufactured by Edward T. Moore, Syracuse, N. Y.

The Limitator can be applied to practically any motor used in paper mills which can be shut down for very short periods of time, or in groundwood mills having electrically driven pulpwood grinders. It reduces the load on the grinders by automatically relieving the hydraulic pressure in the grinder cylinders. The load on beater motors is reduced by slightly raising the beater roll. The load on jordans, pump or fan motors can be controlled as desired.

In the application of the Limitator to electrically driven pulpwood grinders, a hydraulic regulating valve is installed in the water line to the grinders, and so arranged that when the Limitator functions, it will operate this regulating valve, thereby throttling the water, reducing the hydraulic pressure in the cylinders of the grinders, and consequently reducing the load on the motor driving the grinders.

The Limitator does not take the place of the grinder regulator which is used for varying the pressure in the cylinders and particularly for increasing it when a given pocket is being charged with wood—but it is an adjunct thereto. It is connected to the main incoming power line through which all power to the mill passes, including both grinder load and all other load in the mill. If, therefore, the abnormal load occurs in the beater room, for instance, a small portion of load is reduced in the grinder room, using the latter as a means of regulating and keeping the load constant, irrespective as to whether the abnormal load occurs in the grinder room or any other place in the mill.

Weight of Sheet Controlled Foot-by-foot in Making

AN AUTOMATIC scale device which shows any variation from standard weight of paper in the making has been brought out by the Toledo Scale Company, Toledo, O. Uniform production, prevention of waste due to off-weight, saving of time in regulating the weight of paper, and increase of productive hours through eliminating breakages, are the results claimed for this method of weight control in the paper mills.

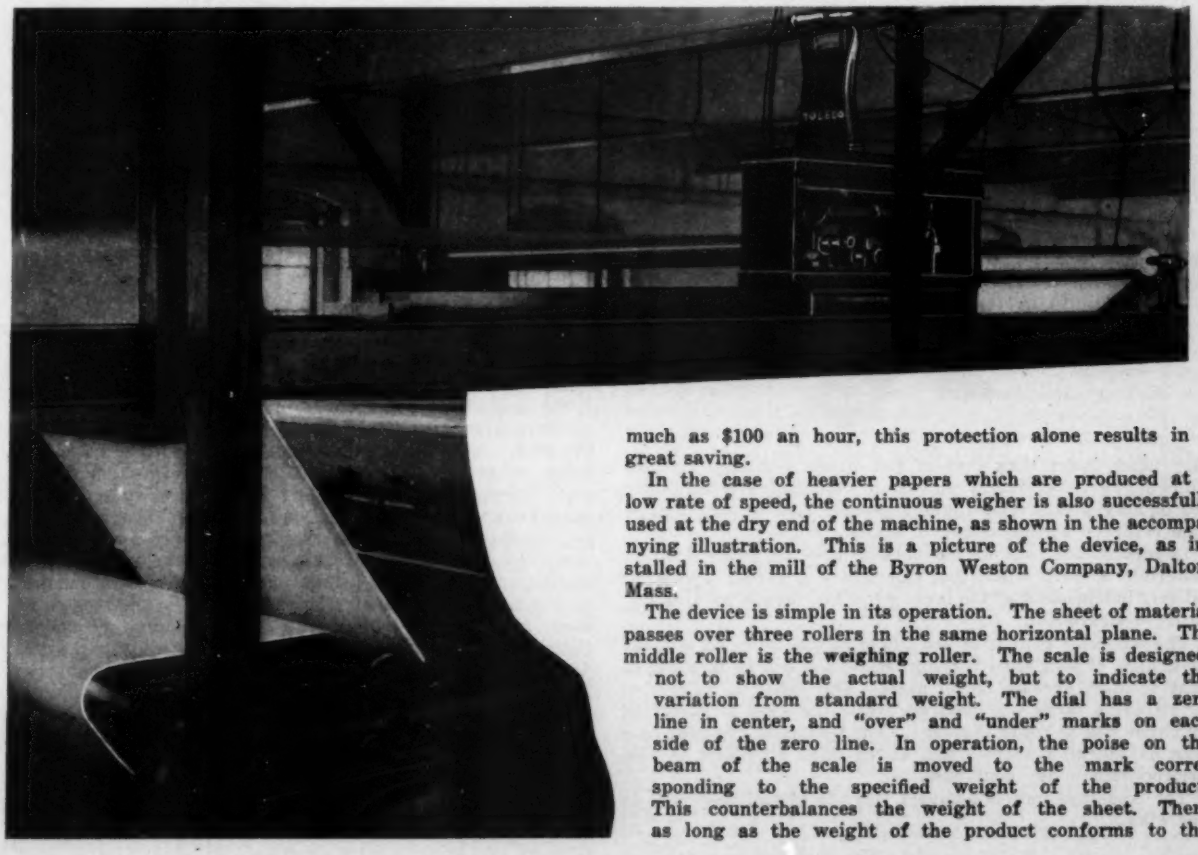
When installed to indicate the weight of the wet sheet just before it enters the dryers, the device serves three important purposes:

1—It enables the workman to hold the wet sheet to a standard predetermined weight just before it enters the dryers.

2—It gives warning when the paper is running light, in time to permit the machine to be adjusted before breakage of the sheet occurs.

3—When equipped for the purpose, it indicates whether each half of the sheet is of the same weight.

As breakages at the wet end are almost wholly due to lightness of the sheet, and since the shutdown while the breakage is being repaired frequently represents a loss of as much as $100 an hour, this protection alone results in a great saving.



In the case of heavier papers which are produced at a low rate of speed, the continuous weigher is also successfully used at the dry end of the machine, as shown in the accompanying illustration. This is a picture of the device, as installed in the mill of the Byron Weston Company, Dalton, Mass.

The device is simple in its operation. The sheet of material passes over three rollers in the same horizontal plane. The middle roller is the weighing roller. The scale is designed, not to show the actual weight, but to indicate the variation from standard weight. The dial has a zero line in center, and "over" and "under" marks on each side of the zero line. In operation, the poise on the beam of the scale is moved to the mark corresponding to the specified weight of the product. This counterbalances the weight of the sheet. Then, as long as the weight of the product conforms to the

specified weight as it passes over the middle roller, the indicator of the scale stands at zero. The moment there is a variation in the weight, the indicator moves to "over" or "under" as the case may be, and indicates how much "over" or how much "under", for the guidance of the workman in making his adjustments.

The device may be equipped to show variations in weight throughout the full width of the sheet, or in each half independently of the other.

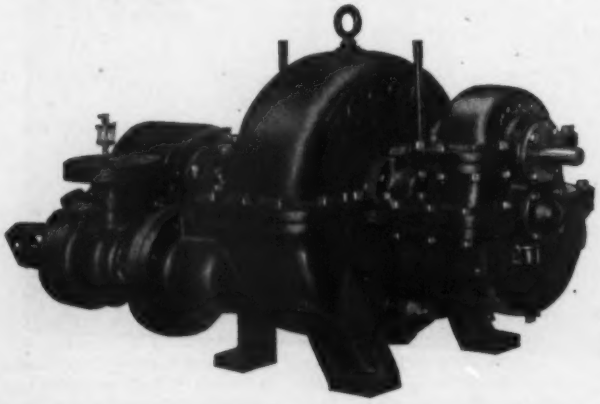
In addition to the dial indication, the scale indicates a variation in weights by means of colored lights. The electrical contact is formed by the lever of the scale touching adjustable stops. A red light may show in case of overweight, a green light in case of underweight. These lights may be placed at some distance from the scale, as in the superintendent's office, so as to inform him whether prompt attention is given to correcting errors.

Besides giving a continuous foot-by-foot indication of weight, the scale, when equipped with an additional device, gives a continuous written record of the weight, hour by hour. This device contains a strip of graph paper on a roll which is operated by clock work. On this paper a pen, which is governed by the indicating mechanism, makes a positive record of the weight. The recording device furnishes a written record of conformity of product to specifications at any hour of the day, and can be made to exert a strong influence by affording an impartial and indisputable means of comparing the work of different shifts.

Combined Turbine and Reduction Gear

A COMBINED single stage turbine with reduction is a new development of the Moore Steam Turbine Corporation, Wellsville, N. Y. This combined unit, shown in the illustration, is built in sizes from 5 to 60 h.p. and is especially adapted for driving fans, blowers, pumps, generators and other auxiliary equipment where reliability, simplicity of construction and low steam consumption are necessary.

For driven machine speeds below 2,000 r.p.m., the steam consumption of the combined turbine and reduction gear is



very much lower than that of the direct connected turbine, while simplicity of operation, ease of mounting and reliability are equally good. The slightly greater cost of this unit is soon returned by the saving of steam.

Important features of the turbine are the heavy blading materials to suit conditions, emergency governor operating entirely independent of the main governor, carbon packing and no close clearances.

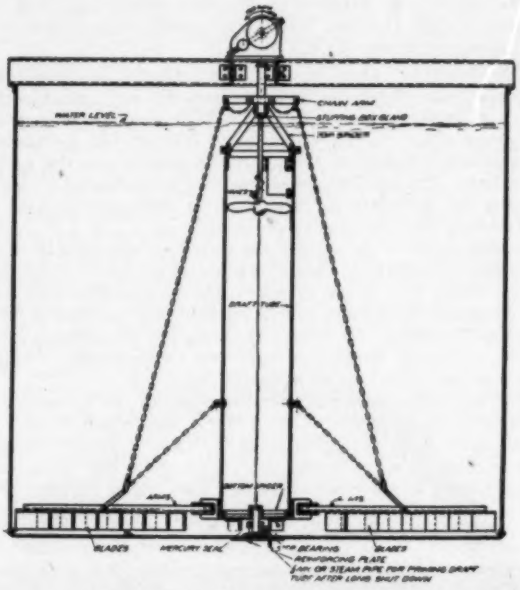
The reduction gear is of the single helical type. It is made of a high carbon steel forging, while the pinion is made of heat treated, chrome nickel steel. The latter is supported by an extra large ball bearing, while the gear is sustained by either ball or roller bearings. The bottom of the gear case acts as the oil reservoir and an effective oil cooler is also incorporated in the gear case.

The combined unit is compact, easy to install and quiet in operation.

The Dorr Impeller Agitator for Causticizing

THE Dorr Impeller Agitator is a special adaptation of the Dorr Reaction Agitator to meet the particular requirements of certain process industries where air agitation is objectionable for chemical reasons and mechanical agitation must be used. It has an important application in sulphate pulp mills for causticizing green liquor, the sodium sulphide content of which makes it undesirable to employ air agitation since this would tend to oxidize the sulphide to the sulphate.

Referring to the illustration it will be seen that the tank contents are circulated through a centrally-located cylindrical shaft tube in which a marine propeller is rotated.



The draft tube, which revolves slowly, is equipped at its lower end with a pair of radial arms equipped with plow blades. The tank contents are given a general circulating movement in both the horizontal and vertical planes which results in a high rate of change of position of the various particles in the liquor being causticized. The path of travel may be characterized as first, upward through the draft tube; second, radially outward just below the surface; third, down through the annular space between the draft tube and tank; and fourth, radially inward to the base of the draft tube. It is the function of the slowly revolving rake arms to keep the bottom of the tank free from settled solids at all times and to serve as a means of moving such particles as do settle to a point under the draft tube where the sucking action of the propeller may elevate them to the surface and return them to circulation.

The draft tube and propeller are driven by a special two-speed reducer mounted on structural steel supports spanning the tank. A quill shaft construction is used, the draft tube being driven by a relatively slowly moving tubular shaft while the propeller is driven at a high rate of speed by solid shaft which runs inside the tubular one. The submerged bearing attached to the tank bottom is simply a guide and is subjected to very little wear since the entire weight of the mechanism is supported from above by the drive unit mounted on the supporting spans. The radial arms are hinged to the base of the tube and fitted with chains so that they may be swung into a vertical position should the agitator be shut down when full and the arms buried in the settled solids. The feed enters through a pipe connection in one side and flows out at the solution level, diametrically opposite when continuous agitation is practised, though the agitator may be operated intermittently on the fill and draw principle, as can be readily understood.

Turnover, the time required to circulate the complete tank contents, may be varied to suit the particular material to be

handled; the more pronounced the tendency for the solids to segregate, the more rapid the turnover required and vice versa. For causticizing soda ash with lime, a turnover of one minute has been found desirable, while other, more finely divided, easily suspended materials are handled with ease with turnovers of eight minutes. The rate of turnover is influenced by the speed, pitch, and diameter of the propeller.

This agitator is expected to find its chief chemical field in those continuous processes where continuous agitation is practised by passing the material successively through three or more agitators arranged in series on slightly different elevations ahead of continuous settling equipment. Its chief points of interest are its ability to mix in two planes, to utilize the full tank volume unaffected by settled material, and power requirements averaging one h. p. for units of the usual 10′x10′ size.

The Charavay Fan for Ventilating

THE ventilation of pulp and paper mills has for a number of years presented an important problem. Due to the difference in the nature of the various processes, it is essential that equipment suitably designed to meet any given set of conditions be used. It is not necessary to mention the places in this industry where special provision for ventilation is required.

The Hartzell Propeller Co. of Piqua, Ohio, has recently placed, in several mills, a type of fan which seems new to the industry. The design of the fan is extremely simple, the equipment consisting of a propeller blade or blades, made with the same accuracy as an aeroplane propeller, properly attached to the rotor shaft of a motor, the motor in turn being supported in such a way that the propeller or propellers may operate at high speed.

The propeller blades are commonly made of a special alloy which is of sufficient strength and of the required lightness to permit smooth and efficient operation. The special alloy used in the construction of the propellers is also rust resisting. It would be possible to use any suitable material in the construction of the blades should the problem at hand require any other alloy than the alloy commonly furnished.

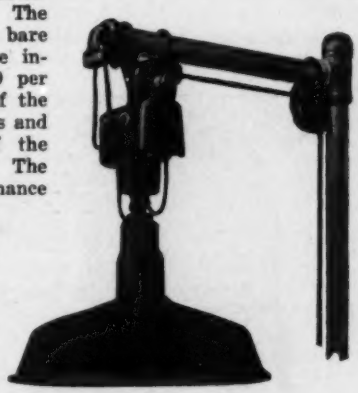
A totally enclosed motor is always employed. The size of motor is dependent upon the capacity of the ventilator or fan.

The fans are built in a number of different sizes, the size being generally designated by the outside diameter of the ring which serves as the support for the entire operating mechanism as well as shields the tips of the propeller blade. The construction of a unit is such that it can be used in a duct and because of the multiblade feature permits its use against considerable pressure. In many cases, ducts are not required and the air may be directed in any desired direction.

A few of the claims made by the manufacturer are low maintenance cost, low power consumption, large air capacity, small installation space, and low initial cost.

The Thompson Hanger

REFLECTORS or shades are used to increase the intensity of illumination on the working surface or, in other words, to redirect the light most effectively to the work. The intensity of light from bare overhead lamps may be increased as much as 60 per cent through the use of the correct type of reflectors and proper maintenance of the lamps and reflectors. The lack of proper maintenance is responsible for a considerable decrease in the amount of available light in many of our industrial establishments, Dust and dirt accumulations on lamps and reflectors, cracked or broken reflectors, burn out of lamps, injury to connections, etc. are only a few of the causes for deterioration of the lighting system.



Oftentimes the efficiency of any system is low because the lights are located in such positions that it is next to impossible to repair or clean them without the use of ladders. In an industrial establishment the maintenance of a lighting system, therefore, becomes an important problem and frequently nothing is done until it is absolutely necessary.

The Thompson hanger was developed to make the systematic cleaning and maintenance of lamps and reflectors easier and safer. This hanger is designed to permit a lamp to be lowered to a height where it can be easily worked upon by a man without endangering himself by climbing in between rows of shafting, machines, etc. Likewise, when a light is lowered, it comes down "dead," thus making it possible for a workman to do a good job of cleaning or repairing the lamp or reflector.

Each hanger is composed of two members—an upper or line member and a lower or lamp member. The upper member is rigidly attached to an overhead support while the lower member is attached to the lamp. This member with the lamp can be easily lowered from the operating position or raised into operating position by means of a chain or cable.

The upper member consists of a housing, in which is enclosed a sheave wheel, terminating below in the form of a canopy which protects two line wire contacts secured in porcelain insulation. A slotted guide, designed to direct the lamp wire contacts of the lower member into correct alignment with the line-wire contacts of the upper member (when the two members are drawn together) is also housed within the upper member. The outside top of the housing is designed to permit it to be readily attached to the overhead support.

The lower or lamp-member of the hanger has a central malleable iron latch stem which carries near its top a brass latch dog that engages a notch in the slotted guide of the upper member, thus locking the two members together when the lamp is in the operating position. A pressure is maintained between the upper and lower contacts through a heavy spring which is housed within the lower portion of the lamp member. Ears on the housing carry the lower contacts which are mounted in porcelain insulation. To the bottom of the lower member is attached the lamp and reflector.

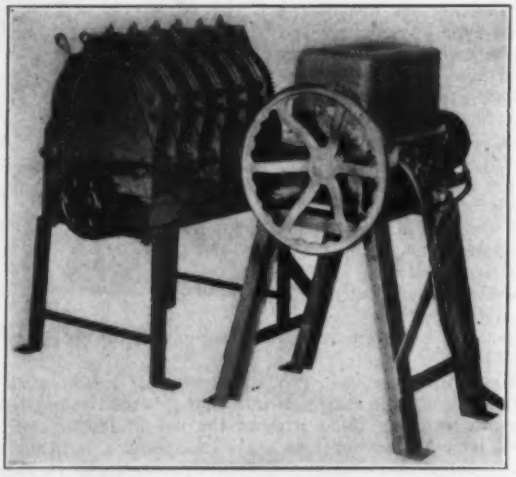
A chain or cable of sufficient length to permit the lower member to be lowered to a convenient working level is threaded over the sheave and down through the slotted guide of the upper member and through the latch stem of the lower member where it is held in position through the use of a couple of convex washers.

Such a hanger should aid in reducing the accident hazard involved in proper maintenance of electric lighting equipment, and in increasing the efficiency of any system of electrical illumination over any given working space.

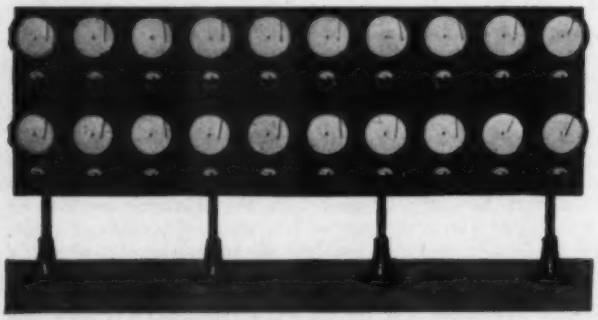
New Bailey Meter Company Developments

DURING the past year, the Bailey Meter Co., Cleveland, O., has developed a new form of its control drive for automatic combustion control, incorporating a large number of improvements based on the company's experience in this field.

The accompanying view shows the drive operating a banked grid rheostat through a sprocket and chain drive with hand



wheel and position indicator mounted on the control drive itself. This new form of control drive has been designed with the points of compactness, accessibility, convenience of location and ruggedness in mind. The fact that this unit



Installation of twenty Bailey electrically operated fluid meters recording and integrating steam flow through the various distribution lines in a large paper mill

can be located right at the element being controlled, in a great many cases eliminates considerable connecting shafting and gearing.

It is not proposed that this control drive will altogether supplant the larger drives previously used, as the latter are particularly applicable to installations requiring zero reset mechanism and other special features. However, in a great many installations, its advantages over the larger type will be pronounced.

Improvements have also been incorporated in the contact making devices of Bailey Meter control equipment so as to simplify and also to refine the system of control.

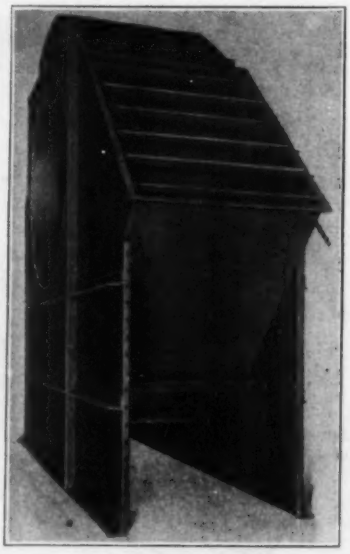
Electric Flow Meters—The Bailey Meter Co. has also entered the electric flow meter field and is producing a meter using the transformer principle. These meters are of the type known as admittance meters which, due to special design, are not affected by voltage variations in the supply circuit between the limits of 95 and 125 volts. The Bailey electric flow meter units are also suitable for service as liquid level recorders.

High Pressure Boiler Meters—Keeping pace with the tendency of new power plant projects towards high pressure boilers and turbines, the Bailey Meter Co. has developed a flow mechanism suitable for operation under pressures of thirteen and fourteen hundred pounds per square inch gauge. Two of these meters have already been furnished and have been in operation for a period of three months. Steel forgings are used for the meter elements subjected to operating pressures.

The Buffalo Cinder Eliminating Fan

IN THE manufacture of pulp and paper, wherein the value of the product is dependent upon its cleanliness, the control of cinders from the power plant is a great necessity.

Power plant stacks need no longer be a source of dust and cinder troubles, for among the systems designed to control the nuisance, a new type of fan which efficiently separates solids from air and gases, has been developed by the Buffalo Forge Co., Buffalo, N. Y.



The Buffalo Cinder Eliminating Fan performs a double duty in boiler plants; it produces draft at high efficiency and cleans the stack gases of cinders and dust. The accompanying illustration shows a No. 15 single width fan which has a capacity of 80,000 cu. ft. of boiler gases per minute. This fan is now removing in one installation about two tons of cinders per day. The front part of the casing is removed to show the louvre openings in the inner scroll through which cinders and solids are discharged. There are no small passages and no danger of clogging even from the worst coals.

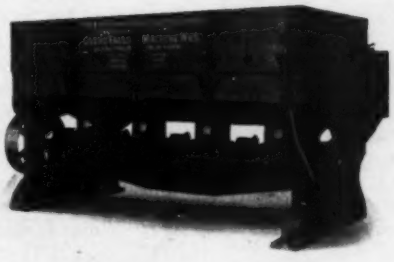
An important feature of this new Buffalo fan is the use of the highly developed standardized Buffalo rotor, which gives maximum air handling efficiency and in combination with the special scroll eliminates the solids with a minimum quantity of air passing into the air-tight hopper.

The housings are made of heavy rolled steel plates with suitable angle iron bracing. A section of the housing is removable for interior inspection. The inlet cones are also removable, so that shaft and rotors can be taken out without dismantling the fan housing.

The result of an analysis of material removed in large quantities by a Buffalo cinder eliminating induced draft fan is shown by the manufacturer to be as follows: 5.5% passed through a 200 mesh screen; 13.4% through 100 mesh; 19.8% through 80 mesh; 39.6% through 60 mesh and 71.4% through 40 mesh. Considering that it is said this material represented approximately 95 per cent of the total solids in the gases, it is easily understood how this new fan fills a long felt requirement in paper mill power plants.

The Fancher Roller Shoe Flat Screen

A FLAT or diaphragm screen that is being built by the Glens Falls Machine Works, Glens Falls, N. Y., has incorporated in its design new features relative to the operation of the diaphragm. The usual type of toe blocks on the trotter arms have been replaced with smooth running cast steel rollers. Likewise, the cams are designed to permit four throws per revolution, are of the split type, and are constructed double. This feature alone, that of the cams being constructed double, permits the throw of the diaphragm to be changed in only a few minutes. It is simply necessary to shut down the screen, and to slide the cam shaft a short distance for the desired cam faces to conform to the corresponding faces of the roller shoes. Such a feature is claimed to allow proper action on different grades of stock to be procured.



Old screens in many cases can be equipped with the Fancher roller shoes and the double cams with very little trouble. In a complete unit, however, as supplied by the manufacturers, the screen is built for strength and rigidity. The legs are shorter than usual which permits the trotter arms to be lighter, and the vat, perhaps, more accessible.

White oak is used in the construction of the bed frame with the frame being built to minimize the possibility of air leaks. Cypress is used in the construction of both the vat and flow box. The flow box is equipped with an adjustable support to permit it at all times to be held firmly against the frame. Witham vat and fasteners, if desired, can be supplied in place of the standard screen construction.

The drive shaft is well supported by long babbitted bearings and is almost completely enclosed. Likewise, key-ways are cut into the shaft in such a way that a steady rather than varying pull is transmitted to the belt.

The accompanying cut illustrates many of the interesting features of this screen.

Cleaner Pulp and Paper

HOW the main source of dirt in pulp and paper can be traced to the wood supply, is explained by D. DeZurik, of the DeZurik Nozzle Shower Co., Sartell, Minn. It often occurs that while a tree is growing, one of the limbs will dry up. The tree continues to grow in diameter and consequently envelops more and more of the dead limb. The portion of the limb enclosed by the trunk of the tree becomes blackened and its bark is also enveloped by the tree trunk. When the pulpwood is delivered to the mill, the barkers remove the bark and a part of the defects on the immediate surface of the block, but the real dirt producers, blocks containing unsound knots, ingrown bark, etc., are not effectively cleaned by the barkers.

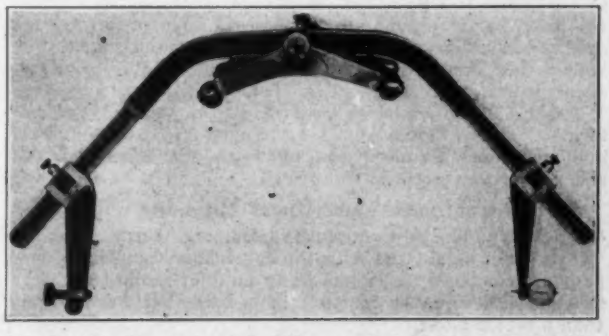
The lack of more suitable methods has forced many mills to employ men to chop out the defects from pulpwood with handaxes, which is very expensive and only half way effective. The use of boring machines for such work effects little or no labor saving; some shavings remain, and all the defects cannot be removed because borings cannot be made which completely overlap each other.

A machine of the type illustrated has been designed by the DeZurick Nozzle Shower Co. to do this work quickly and economically by a combination of a sawing and chiseling device. A five horsepower motor is directly connected to the arbor which is supported on large double oil ring bearings. The frame is of cast iron with a steel table, the entire unit occupying 3x8 feet floor space. The machine makes a cut 1¾ inches wide and of any depth up to five inches. The cut is free from sawdust and rough edges. By this method all of the defective parts of the wood can be removed with great rapidity. A single operator with this machine can do more work than four men could by hand labor methods. The labor saving as well as its thoroughness in cleaning wood, has made it particularly suited to modern methods of efficient plant operation.

New Type Roll Caliper

PAPER MILLS that realize the importance of having their calender rolls extremely accurate will be interested to learn of the new Farrel Micrometer Roll Caliper recently announced by the Farrel-Birmingham Company, Inc., of Ansonia, Conn.

The high precision, rapid setting and light weight combined with the ease of handling makes this an invaluable instrument for calipering long rolls of any kind.



The saddle, made of aluminum alloy, is mounted on four hardened steel rollers. The cross bar has two arms extending downward on either side of the roll at a constant angle. A steel pintle with hardened centers mounted in hardened bushings on the saddle, supports the cross bar and allows it to pivot. The cross bar may be moved along the pintle and is held in any position by a clamping screw. Each angle on the cross bar is marked with quarter-inch marking showing the range of the caliper. On one angle is mounted the gauge arm and on the other the dial arm.

Just two adjustments are made when changing from one diameter roll to another as it is only necessary to move the gauge and dial arms to the required diameter on the scale. Any variation in the diameter of the roll is detected on the dial indicator as the caliper is moved along the face. The dial may be set at any angle that is most convenient for reading. There is no jumping of the indicator when calipering, as the saddle is carried on rollers,

giving a smooth motion regardless of whether the roll is wet or dry.

Another interesting feature is the calipering of rolls to the very end of the face without reversing the instrument. The cross bar may be moved to any point on the pintle and the extreme positions bring the contact points of the dial beyond the center line of the rollers. The light weight, due to the majority of parts being made of aluminum alloy, allows an operator to caliper rolls with minimum effort. There are at present four sizes, taking rolls from 8" to 50" in diameter.

A Unique Shaped Refractory

ONE of the most difficult problems of fire brick construction, in the opinion of a great many engineers, is the difficulty in making brick stay put under the stress and strain of actual working conditions. There is always the tendency for walls to loosen up and joints to open, resulting in heat losses, slag penetration and eventual disintegration. This problem of a stronger wall is said to have been solved by the development of Biasbrix, a unique shaped refractory. As the name implies, Biasbrix are laid up on the bias, one brick overlapping and tying together three other Biasbrix in a natural, self-locking construction which gives exceptionally tight joints and a wall of great strength. Owing to this peculiar construction and interlocking feature, walls laid of Biasbrix do not loosen up, joints remain tight and heat losses and slag penetration are reduced to the minimum.

Although different in shape, Biasbrix lay up as readily as the ordinary straight brick in any thickness of wall from 4½" to 27" or more, and are equally well adapted to large or small installations. They are particularly well suited for hollow wall construction, where a strong bond is of paramount importance.

Biasbrix is an exclusive product of the General Refractories Company, Philadelphia. Although radically different in shape from the conventional fire brick, Biasbrix are available as regular stock.

Allis-Chalmers Centrifugal Pumping Units

THE type SSU Centrifugal Pumping Units recently brought out by the Allis-Chalmers Manufacturing Company are combined motor and pump units of simple, compact, substantial design, the complete units being not much larger than a motor alone.

Both the pump and motor parts are built and guaranteed by the same manufacturer, so there is no divided responsibility as well as insuring that the pump and motor ends are properly proportioned to work together as an efficient, reliable unit. The unit is close coupled by fastening the pump impeller to one end of the liberal diameter extended motor shaft and the pump casing is bolted to a special integrally cast extension of one of the motor end housings. This makes the simplest possible construction and eliminates a base plate, coupling, and pump bearings and does away with the possibility of misalignment between the pump and motor. The motor bearings, which are the pump bearings as well, are over size Timken tapered roller bearings, having ample thrust and radial capacity, and are mounted in dust and grease-tight housings. These bearings have practically negligible wear, carry the thrust of the pump impeller and need only infrequent renewal of the lubricant.

The pumps are built in 1¼"x1¼", 1½"x1½", 2"x2", and 2½"x2½" sizes and can be used with 1, 1½, 2, 3, 5, and 7½ horsepower motors. The capacities handled range from 25 to 200 g. p. m. against heads of from 50 to 100 feet. These units are very efficient and have many applications within their capacity head range.

Allis - Chalmers type SSU centrifugal pumping units

A Sanitary Wash Fountain

SANITARY engineering has made marked progress in the pulp and paper industry of North America within the last few years. This work has resulted in equipping many mills with sanitary equipment. One piece of equipment that has recently come to our attention is the Bradley washfountain.

The fountain is made from a concrete composition, and is treated by special processes in such a way that it presents a very hard surface and an attractive appearance. Several grades and two sizes of fountain are manufactured. One fountain which is 54" in diameter, is designed to accommodate ten persons, while the other fountain is 32" in diameter and will accommodate six persons. Such fountains are circular in shape and of such a height that elbows of the user extend over the wall of a fountain. Water is distributed to the user in the form of a spray, so that with a suitable pressure, the spray furnishing water for ten persons will require approximately three gallons of tempered water per minute.

Bradley Washfountain with self-closing foot-

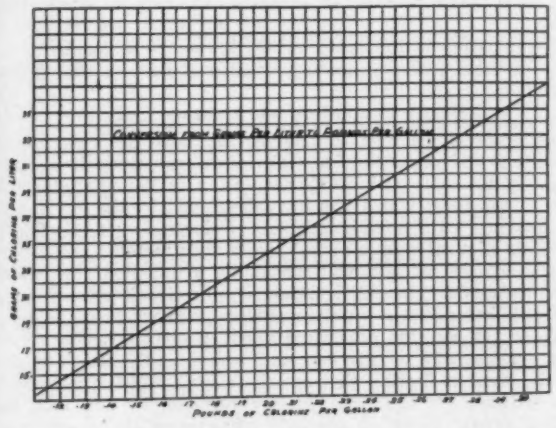
Claims are made that this type of fountain requires less floor space than other wash fixtures, and that the material used in the construction of the fountain does not deteriorate in use. Likewise, if the surface should become impaired it can be repaired.

Detailed information about this fountain may be obtained by writing the Bradley Washfountain Co., Milwaukee, Wis.

Practical Helps for the Mill Man

Conversion Chart for Use in Bleaching Operations

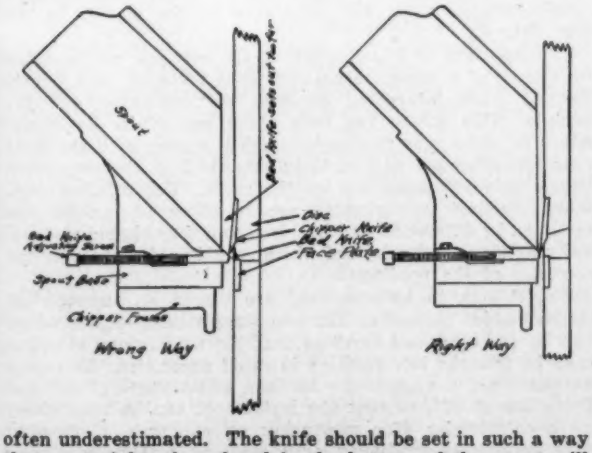
THE bleach consumption of various pulps varies considerably so that it is necessary for the bleach operator to be informed on the grade of pulp to be bleached, the quantity of bleach (expressed in terms of percentage of 35 per cent bleaching powder or in terms of percentage of active chlorine) required and the analysis of the bleaching liquor. The analysis of a bleach liquor is commonly recorded as grams



of chlorine per liter. This must be presented to the operating man in such a way that it becomes easy for him to utilize it. One mill, at least, has found it advantageous to develop a chart, as illustrated, by which it is simple for the bleach operator to convert the analysis of the bleach liquor from grams of chlorine per liter to pounds of chlorine per gallon. The bleach room operator, therefore, thinks in terms of pounds of chlorine per gallon and is able to compute accurately the number of gallons of bleach liquor of a given analysis that would be required to bleach a definite weight of any grade of pulp being produced at the plant.

Setting Bed Knife of Chipper

THE setting of a bed knife in a chipper to obtain best results in the chipping of the wood bolts is a task requiring care and skill. The importance of proper setting is



often underestimated. The knife should be set in such a way that a straight edge placed in the bottom of the spout will just nip its cutting edge. Such a position often permits the cutting edge to project for about 1/16 of an inch inside the spout base. The disc should then be adjusted to permit the knives to clear the bed knife by approximately 1/32 to 1/16 of an inch. A chipper with the bed knife properly set and the disc adjusted to conform with the setting of the bed knife will produce more and better chips than the same kind of chipper operating under similar conditions with the bed knife set incorrectly. A bed knife placed in position as illustrated and designated as "Wrong Way" will spring, dull more readily, and will not permit the chipper to produce as high quality chips as if set as shown in illustration and designated "Right Way." The right sized chip well cut is a good start in the production of satisfactory pulp and high yields.

Grinding Wheel Data

MACHINE shop operators and others who make use of the grinding wheels, frequently desire data on the revolutions per minute of a grinding wheel that is to be run at a certain peripheral speed, or vice versa. Data in the follow-

Diam. Wheel in Inches	4000	4500	5000	5500	6000	6500
1	15279	17200	19099	21000	22918	24850
2	7639	8590	9549	10500	11459	12420
3	5093	5725	6366	7000	7639	8270
4	3820	4295	4775	5250	5730	6205
5	3056	3440	3820	4200	4584	4970
6	2546	2865	3183	3500	3820	4140
7	2183	2455	2728	3000	3274	3550
8	1910	2150	2387	2635	2865	3100
10	1528	1720	1910	2100	2292	2485
12	1273	1453	1592	1750	1910	2070
14	1091	1228	1364	1500	1637	1773
16	955	1075	1194	1314	1432	1552
18	849	957	1061	1167	1273	1380
20	764	860	955	1050	1146	1241
22	694	782	868	952	1042	1128
24	637	716	796	876	955	1035
26	586	661	733	809	879	955
28	546	614	683	749	819	887
30	509	573	637	700	764	827
32	477	537	596	657	716	776
34	449	506	561	618	674	730
36	424	477	531	583	637	689
38	402	453	503	534	603	653
40	382	430	478	525	573	621
42	364	409	455	500	546	591
44	347	391	434	477	521	564
46	332	374	415	456	498	539
48	318	358	397	438	477	517
50	306	344	383	420	457	497
52	294	331	369	404	441	407
54	283	318	354	389	425	457
56	273	307	341	366	410	443
58	264	296	330	354	396	428
60	255	287	319	350	383	414

ing table includes the revolutions per minute for various diameters of grinding wheels to give peripheral speeds of 4000, 4500, 5000, 5500, 6000 and 6500 feet per minute. A 30 inch diameter wheel, for example, should be operated at 509 r.p.m if the desired peripheral speed were 4000 feet per minute.

The Dyestuffs department of E. I. du Pont de Nemours and Co. has placed on the market Du Pont Quinoline Yellow Concentrated, an acid color of very green and bright shade. This product is exceedingly level dyeing and extensively used as a self color. It may be also used with blues and greens for producing very bright greens. It is a very desirable color for producing canary shades on paper and when so used is extremely fast to light. It is suitable for calender coloring and for dipping plain and crepe tissues.

The T. B. C. Photo Colorimeter[1]

By RENE TOUSSAINT

WHEN we are asked to define a color, the answer seems relatively simple if we have a shade in which one of the primary colors, such as blue or green, strongly predominates; but it becomes much more difficult when there is no predominating primary, or when the latter is mixed with a considerable proportion of its complementary. Recourse must then be had to comparisons to translate our visual impressions; and these comparisons, which are somewhat fantastic at times, may be taken from any of the three kingdoms of nature, or even from our imagination. We thus have "mahogany," "lilac," "salmon," "ivory," "brick red," "electric blue," "tango," and others too numerous to mention.

Such vagueness is due to a lack of ready means for analyzing and measuring shades, and makes it extremely difficult, not to say impossible, to properly duplicate a given shade. And this trouble is still further enhanced by present-day fashions which tend to colors without any clear-cut dominant shade, such as grays, fawns, flesh, etc.

It has been said that color belongs to the realm of art rather than of science, and that art cannot be measured. But what then of the architect and sculptor? What also of the musician, whose most beautiful melodies are translated on the staff by means of symbols having a perfectly definite and scientific meaning? There is considerable analogy between color and sound both consisting of waves of variable lengths.

Definition of Colors

First of all, let us see exactly what a color is. It is the resultant of an indefinite number of radiations or shades, each of definite intensity. The intensity or tone of a color indicates the place it occupies on a scale extending from white to black, while its shade or radiation indicates its position on the chromatic scale extending from red to violet.

A color can therefore be represented in a very simple manner by a curve, analogous to a musical staff, in which the abscissas are the shades (expressed in terms of wave-lengths) while the ordinates are the luminous intensities. In order to construct such curves, it is sufficient in practice to determine the luminous intensity for the mean wave-length of the six standard zones of the solar spectrum (red, orange, yellow, green, blue, violet). The curve of any color is thus determined by means of six points. The luminous intensity in each case is expressed as the per cent of the amount of the same radiation present in a standard white; and the higher the value found the more intense and luminous is that particular shade in the color under consideration.

Such curves constitute graphical definitions of colors. In order to translate them verbally, we suggest naming the dominant and giving the percentage values found for the four characteric points of each curve: the highest point of the curve (the dominant shade), the lowest point (the complementary of the dominant), and the two points nearest the dominant, one on either side. This gives two series of two numbers each, and the value of the lowest wave-length should be given first in each series.

Examples: Blue 48, 12-45, 15 indicates an intensity of 48 for the blue wave-length, 12 for the orange, 45 for the violet, and 15 for the green.

Red 4, 25-5, 15 indicates an intensity of 4 for green, 25 for red, 5 for violet and 15 for orange.

If there is no dominant, as in the case of a strictly neutral gray, the color may be characterized as neutral gray 50, the curve being a horizontal line at the 50 per cent level.

When the dominant does not stand out clearly, as with gray and allied colors such as fawn, khaki, etc., the color may be defined as:

Orange gray 42, 48-55, 57 (manganese sulphide), or

Orange gray 65, 95-90, 90 (flesh).

Each of these formulas thus gives four points on a curve. Two other points would be required to define the curve completely, namely the points for the wave-lengths on each side of the complementary of the dominant shade; but experience has shown that it is not essential to know these two points. Conversely, when the four characteristic points are known, any dyer can reproduce the curve and use it in the manner which shall be referred to further on.

The more nearly horizontal the curve of a given color, the less pure is the color, and the curves of colors without any well-defined dominant are quite flat. On the other hand, the purer the shade of a color, the more nearly vertical its curve. As a matter of fact, absolutely pure monochromatic colors do not exist; all the shades that are met with in practice are compound. It is therefore not possible to produce a given color by means of radiations of a single wave-length. Other elements are required, and it is these elements which the eye cannot gauge and differentiate in color-matching for the following reasons:

1—too large number of elements to measure simultaneously,

2—variation in the spectrum of the source of light,

3—natural weakness and inefficiency of the eye and optical illusions.

Device to Analyze and Measure Color

In order to be able to analyze and measure colors with accuracy and certainty, it is therefore necessary to replace the eye by some reliable device. Such is the photo-electric cell in the form which has been developed by the Société de Recherches et Perfectionnements Industriels, of Paris. It consists of a glass bulb coated inside with metallic potassium, which acts as cathode, and containing a tungsten ring which acts as anode. The cell is inserted in a circuit comprising a 120-volt battery and a galvanometer. When a beam of light falls on the cell, the potassium gives off electrons which vary the conductivity of the cell and consequently the intensity of the current flowing through the circuit. As the current is proportional to the light energy received by the cell, the galvanometer gives an absolute measure of the quantity of light received and acts as a photometer.

The operation of the instrument is quite simple. Light from a suitable source (preferably a Philipps "Pintolite" lamp, in which an arc is struck between two 2-mm. tungsten spheres) is first passed through a condenser to concentrate the rays and is then directed on to the sample, from which it is reflected on to the photo-electric cell, causing an immediate variation in the current flowing through the galvanometer. If a mirror galvanometer is used, its deflection is measured by means of the displacement of the luminous spot on a suitably graduated scale. If an ammeter is used instead of a galvanometer, the reading is taken directly from the position of the needle over the scale. The ammeter is of more rugged construction and cheaper than the galvanometer, but it is much less sensitive, and in order to obtain the same sensitiveness the current must be amplified. Work is at present under way on this problem, and it is hoped that a satisfactory amplifier will be placed on the market in the near future.

The intensity of illumination of the cell can be regulated by means of a screen, consisting of a plate of very lightly smoked glass interposed between the condenser and the sample. This screen can turn about one of its horizontal edges so as to vary the angle which it makes with the light rays and eliminate part of them by reflection, the proportion thus eliminated depending on the angle. The rotating edge moves against a graduated arc to allow of making the readings by difference, and in this case a very simple mechanical amplifier can be devised which considerably increases the accuracy of the readings.

The objects to be examined are placed on supports or stands shaped somewhat like miniature reading-desks, which can be slid back and forth so that the sample and standard may be brought into position in rapid succession. Two such supports are provided, one inclined at an angle of 45° and the other at 22°, so that the instrument can be used either as a colorimeter (for measuring colors) or a photometer (for measuring brilliancy or gloss), as will be explained further on.

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[1]Abridged translation prepared by A. Papineau-Couture from *Bulletin de la Société d'Encouragement pour l'Industrie Nationale* Vol. 126, pp. 421-430, June 1927.)

In order to construct the curve for a given color, six color screens (violet, blue, green, yellow, orange and red, are interposed successively between the condenser and the sample stand, and two readings are taken with each screen, one with the sample and one with the standard.

Liquids are examined by transmitted instead of reflected light, and are placed in cells consisting of two glass plates securely clamped on a rubber-covered, U-shaped metal strip, forming a V-shaped cell, so that the thickness of the layer of liquid through which the light is passed can readily be varied at will.

The brilliancy or gloss of a body is the same thing as its reflecting power. It may be measured with our instrument by directing on to the photo-electric cell a beam of light that has been reflected from the sample under investigation. If the standard and sample are not of the same color, the differences in luminosity of the values observed in reflected light caused by such differences in tone must be eliminated by taking a second set of readings in diffused light.

When a beam of white light is directed on to a colored surface, it may be considered as being divided into two portions: (a) white, or "brilliant," rays, which are reflected at angle equal to the angle of incidence; (b) colored rays, which are diffused in all directions about the point of incidence by the dull coloring matter as well as by the material itself of which the body is composed.

Suppose that these last rays are diffused uniformly and evenly in all directions. Then if dB is the difference in gloss between two samples, or between the sample and a standard, and dC the difference in shade between them, by taking comparative readings using the 45° stand we measure dB + dC. If now we make comparative readings with the 22° stand, the reflected rays no longer fall on the photo-electric cell and we measure only dC. The difference between the two gives dB, the difference in gloss, which even the best-trained eye cannot estimate.

This measurement depends on the assumption that dC is the same in both sets of readings. That this actually is true has been proved by taking readings with samples in which dB = O, so that the second set of readings gives a proper correction for dC.

We have already seen that the curve of any given color is determined by means of six points giving the value or intensity of the violet, blue, green, yellow, orange and red entering into its composition. In order to determine these six points, readings are taken on the sample and on the standard with each of the monochromatic filters previously mentioned, and the ratio between the two readings is calculated for each color.

Of course a colored standard can be used instead of a white one, and this is particularly useful for matching colors. Experience has shown that in this case it is generally sufficient to determine three points, instead of six, giving the values for the dominant shade and for the ones on each side of it.

The interpretation of such curves may, at first sight, seem somewhat difficult and delicate; but with a little practice it becomes an easy matter to "read" them, and the relatively small effort required is well repaid by the many useful and interesting applications to which they may be put.

Determining Selection of Substitute Dyes

The preparation of dye baths and the selection of suitable dyes become very simple, as shown by the following example. Having been requested to find a substitute for a certain sulphur black (A) which was considered too expensive, I examined a large number of different products. Amongst them were two products, B and C, which gave curves which were practically symmetrical with respect to that of A taken as standard. I then determined the concentration at which the three colors gave the same intensity for the violet, and a mixture of equal parts of solutions of B and C at this concentration gave a curve identical to that of A. The desired color had been synthesized from purely theoretical considerations, and subsequent dyeing tests bore out the results obtained by means of the instrument.

Instrument Is Durable with Diversified Uses

It should be noted that the instrument is built to be able to stand rough usage, so that it can safely be put into the hands not only of trained laboratory helpers who are accustomed to handle instruments such as colorimeters and polarimeters, but even of ordinary intelligent mill hands. None of the parts of the instrument wear out, with the exception of the battery, which must be renewed about once a year. The photo-electric cell does not change, as shown by the fact that one cell has been in constant use for four hours a day for the last eighteen months, and its sensitiveness has not varied. The instrument is quite flexible and readily lends itself to widely varying conditions by varying the intensity of the source of light, the inclination of the smoked glass screen and the voltage of the battery. It was designed and constructed primarily for works control rather than for scientific investigations.

Of the many diversified uses to which it can be put, the following are of especial interest to the paper industry:

Measuring the gloss and finish of paper,
Measuring the transparency of paper,
Testing and comparing dyes,
Preparation of dyeing formulas,
Matching of colors,
Measuring the degree of bleaching,
Measuring fastness to light, heat, or other physical or chemical agents.

Shartle Bros. Machine Co. Buys Griley-Unkle Co.

Falling in line with the present tendencies of increased volume and lower overhead demanded by modern business, the Shartle Brothers Machine Company, Division of The Black-Clawson Company, has purchased the Griley-Unkle Engineering Company, and has merged the Indiana Company with its own organization at Middletown, Ohio.

By taking over the Griley-Unkle Company, and acquiring all its patents the Shartle Bros. Machine Company now comes into control of the successful methods of continuous beating. The question of priority of patents and infringements has long been quite aggravated and for the past two years the situation has been fast approaching the point of involved litigation, and, undoubtedly, had it not been detrimental to the interests of the many friends and customers, the situation would have reached the courts before this.

The merger of these two companies brings together the two pioneers of continuous beating, Charles W. Shartle was awarded the basic patents on continuous beating, the first patent merely covering the process of cutting a hole in the side of the beater and making the beater overflow. This patent was followed by several others, enlarging upon the overflow idea, and finally with the purchase of the Brownell-Buehler patents on the perforated backfall, the Shartle Beater was devised.

Charles W. Unkle developed his perforated hood, or extractor, at about the same time. His type of machine differed from Shartle's in that stock was taken from the roll through the hood instead of through the backfall. Both companies have been successful and great numbers of both types of extracting devices have been sold.

Besides the patents on the removal of pulp through the beater hood, the Shartle Company has now come into the possession of all patents on the Murphy Junk Remover, the Unkle Roll Raiser, the Unkle System of Continuous Coloring, and also has the exclusive sale of the Hardinge Rod Mill, for the paper industry.

The organization of the Griley-Unkle Company has already been amalgamated with the Shartle Company, and its files, records, and office equipment have been moved to Middletown. H. J. Andrews, president and general manager of the former company is now located in the Shartle offices, and will be in charge of sales of rod mills and all Griley-Unkle equipment, and will specialize in layouts of continuous beating plants.

The Month at Washington

CONGRESS has achieved a most satisfactory rate of progress since it convened December 5th, considering the fact that the formative stage occupied the first week of activities, and that the Christmas recess from December 21st to January 5th took quite a slice out of the number of working days for the opening sessions of the 70th Congress.

Representative Browne of Wisconsin introduced his bill (H. R. 5488) for the purpose of securing scientific investigations by the Forest Service to discover economically practical method of the disposal of the waste materials of pulp and paper mills without polluting streams, which was referred to the Committee on Agriculture of the House, which will hold hearings and consider the bill for the purpose of reporting it to the floor of the House for its action.

Lobbying in the halls of the Capitol is going to encounter obstacles in the near future if several bills now introduced will become a law. Senator Caraway of Arkansas proposes to require registration of all lobbyists in his bill, (S. 1095) and Congressman Schaler of Wisconsin proposes to require all lobbyists to disclose their interest in all bills before Congress, and to regulate lobbying and to keep tab on all those who attempt to procure the passage or defeat of any measure in Congress (H. R. 6098).

Congressman McLeod of Michigan would provide governmental aid in commercializing aviation in the United States in H. R. 217, which, if passed, would no doubt give considerable impetus to passenger and freight traffic and further revolutionize present transportation methods.

The construction of an international highway to South American countries and air mail service with Pan-American countries is proposed in several bills (H. Res. 35) by Congressman Watson of Pennsylvania and (S. 1666) by Senator Moses of New Hampshire. The bills, if passed, will extend the foreign air mail service beyond Havanna, Cuba.

In reintroducing the Fair Trade Bill (H. R. 11), Senator Capper and Congressman Kelly issued a joint statement in which they declared that the business men of the country are entitled to prompt legislative relief and the public to protection against misleading price manipulation and predatory price-cutters. This bill would protect trade mark owners, distributors and the public generally against injurious and uneconomic practices in the distribution of articles of standard quality under a distinguishing trade mark, brand or name. The bill is now under consideration by the Interstate and Foreign Commerce Committee of the House. (S. 1418).

Congressman Britton introduced H. J. Res. 10, relating to the establishment of commodity quantity units for general use in merchandising after 1935, which would make the use of the metric system of weights and measures compulsory in this country.

Senator Kink would provide compulsory licenses for unused patents in S. 705 as an aid to industry.

Congressman Griest of Pennsylvania in H. R. 56 would authorize the postmasters throughout the country to issue receipts to senders of ordinary mail of any character, whether domestic or foreign, and to fix the fees chargeable therefor.

The new revenue law, with its attending tax reduction program, engaged not only the Congressional Solons during the December session, but also the attention of the business world. Passed by the House before the recess, the Senate is now wrangling with the bill, and it is hoped to return the bill to the House with amendments, by February 1st, when a get-together compromise will send it scurrying back to both Houses for final passage and submission to the President.

The corporation tax is cut from 13½ to 11½ per cent under this new bill, with the exemption raised for smaller corporations from two to three thousand dollars, and with a change in the graduated tax for corporations earning less than $7,000; the tax would be 5 per cent; for those with incomes between $7,000 and $12,000, seven per cent, and from $12,000 to $15,000, nine per cent. The automobile sale tax is wiped out altogether, and club dues are reduced by one-half. The transfer tax on shares of capital stock is cut from 2c to 1c. No change is made in the intermediate brackets of the individual income taxes. The evasion of surtaxes by corporations was not touched, except to subject all corporations to a tax of 25 per cent on their net income if they retain 30 per cent or more of their net income in any one taxable year, and deductions are allowed for dividends actually declared during the year and for Federal income taxes.

While several measures have been introduced by members of the House proposing changes in the tariff, the Chairman of the Ways and Means Committees does not think that the committee will consider any tariff revision at this session of Congress. Of course, when the House as a Committee on the Whole gets together things may be different again, as was demonstrated in the Tax Revenue Bill, which was changed from the recommendations of the Ways and Means Committee as a tax reduction measure of $225,000,000 to a total reduction of $289,000,000.

Congressman Vestal of Indiana reinstated his trade mark bill (H. R. 6683), which passed the House last February and was favorably reported by the Senate Committee on Patents, and would have passed the Senate but for the filibuster. This will undoubtedly be enacted at this session. The purpose of the bill is to have all the trade mark laws consolidated into a single statute and to overcome defects in the present law on trade mark registration and use.

Senator Oddie would regulate the manufacture and sale of stamped envelopes in S. 1752.

The reconvening of Congress in January 5th, therefore, finds Congress faced with a long calendar of potential legislation, in the form of these and many other bills introduced and referred to committees. The results of these labors will be scheduled in next month's report.

New Process to Increase Life of Paper Currency—The life of paper currency of the U. S. has been increased more than 40 per cent as a result of investigations conducted by the U. S. Bureau of Standards, the Bureau of Efficiency and the Bureau of Engraving and Printing. The use of caustic soda in cooking the papermaking rags is one of the processes thus far evolved, together with the use of cheaper cotton fibers to replace linen fibers. A study of commercial papers shows that this new paper now made for use as currency has no counterpart commercially. Fine paper manufacturers in general have been asked to co-operate with the commercial development of this new type of paper. Several concerns are now conducting experiments in their mills, which show that the Bureau's method of papermaking is entirely feasible commercially, so that the Treasury Department is no longer apprehensive of obtaining a sufficient supply of the desired type of paper. Additional problems are, however, being studied in the paper manufacturing process in the Bureau's mill.

Paper Folding Test—A new technologic paper (No. 357) has been issued by the Bureau of Standards dealing with the calibration and adjustment of the instrument commonly used to measure the folding endurance of paper. Paper in use is subjected to a variety of types of wear involving bending, creasing and folding. The Schopper folding tester is designed to test the probable resistance which paper offers to

such wear. The Bureau describes a new device which it has perfected to offset the difficulties of the Schopper tester, and this method is described on this bulletin just issued.

Federal Trade Commission Findings—Enormous increases in the amounts of stock dividends paid by corporations to shareholders, since the decision of the U. S. Supreme Court held that such dividends are not taxable to shareholders, is revealed by the Federal Trade Commission in its report of its investigation of stock dividends of more than 10,000 corporations, as ordered by the Senate (Res. 304). Senator Norris of Nebraska called for the investigation, declaring it had become the common practice of corporations to protect stockholders from payment of income taxes by awarding stock dividends, which were not taxable to the holder, instead of paying cash dividends or other forms, which were taxable. This, it was also claimed, enabled corporations to acquire competing plants, thus avoiding provisions of the anti-trust laws. The report of the Federal Trade Commission will be used in framing legislation concerning stock dividends.

"Trade Practice Conferences" is the title of a new pamphlet issued by the commission, showing how this practice has been developed in the last six years as a most effective method for settling disputes that arise from unfair methods of competition in business. Just what has taken place in 25 conferences recently held, is shown in this report.

Interstate Commerce Rulings—Freight tariff schedules have been filed with the Interstate Commerce Commission by the railroad putting into effect a comprehensive revision of the interstate class rates within southern territory, and of most of the class rates between southern territory and official territory, north of the Ohio River and east of the Mississippi, in accordance with a series of rate scales based on mileage prescribed by the Commission in its report on Southern Class Rate Investigation, No. 13494.

The Whitaker Paper Co. vs. Cleveland, Cincinnati, Chicago & St. Louis Ry., (No. 18535), the commission finds that rates on paper envelopes, in carloads, from West Carrollton, O., to Atlanta, Ga., were not unreasonable and the complaint was dismissed.

In Crown Willamette Paper Co. vs. Northern Pacific Ry. Co., (No. 18232), the commission found that rates on wrapping paper and paper bags, in carloads, from Camas, Wash. to Pendleton, Ore. and Lewiston, Idaho, were not unreasonable or unjustly discriminatory, and the complaint was dismissed.

Proposed increased rates on chip board, fiber board, and pulpboard, from Marrero, New Orleans, and Port Chalmette, La., and Mobile, Ala., to Bay City, Mich., were found justified in Celotex Co. vs. Akron, Canton & Youngstown Ry. (No. 17,543), while rates assailed on fiber board to destinations in central territory and to certain other points were found not unduly prejudicial nor unreasonable, except where they exceeded the aggregates of intermediate rates contemporaneously in effect over the same routes between the same points.

The Commission in a ruling just handed down holds that an issue of undue prejudice to intrastate commerce and undue preference in interstate commerce, and of unjust discrimination against intrastate commerce, is not within its purview. (Docket No. 14,047.)

Recent Patent Office Decisions—A package of paper towels, in each of which the end flaps are of equal width, but of less width than the remaining portion, is nevertheless patentable over a French patent in which the lines showing the paper folds are in such irregular and uncertain style as to forbid the absolute conclusion that shorter flaps were intended, says the Commissioner of Patents in No. 1,927, in re Ek, holding that a foreign patent cannot be measured as anticipatory by what might have been made out of it, but only by what is clearly and definitely expressed in it.

In view of the long use by business men of the word "Sun" and representations of the sun in making trademarks, the Commission of Patents held that anyone had the right to use the word "Sun" or a representation of the sun, providing his mark otherwise differed sufficiently from prior marks so as to render confusion in trade improbable (Louis Meyers & Sons, Inc., vs. O'Callaghan & Feddon, No. 1,933), and consequently a mark consisting of the word "Sunlight," superimposed on a portion of the sun with rays, was held not deceptively similar to a mark consisting of the representation of a rising sun used in connection with the firm name.

Increased Production Predicted—Greater purchases and, therefore, a greater volume of production in industry, is indicated for 1928, according to Ray M. Hudson, Assistant Director, Bureau of Standards. Narrow profit margins in most lines will accompany sharp competition. Individual prosperity has resulted in a growing demand for style, while there is a demand also for more art in industry. Continuance of high wages and steady increase in industrial efficiency is predicted, which means in turn higher purchasing power for the mass of the people. High pressure selling to combat hand-to-mouth buying has increased the cost of doing business. The demand for style and the consequent diversification of products have run up inventories and their costs-to-carry, as well as manufacturing and selling costs. Standardization and simplification are, therefore, recommended for increased earning power for capital and larger profit margins.

Employment and Payroll Totals—The following table shows employment in the paper manufacturing industry and pay-roll totals with 1923 as the monthly average of 100:

	Employment			Pay-roll totals		
	1926	1927		1926	1927	
	Nov.	Oct.	Nov.	Nov.	Oct.	Nov.
Paper and printing	106.6	104.2	105.1	115.0	113.7	114.7
Paper and pulp ..	95.8	93.3	93.1	103.5	99.5	99.0
Paper boxes	107.2	102.9	103.8	117.9	117.6	117.5

Wholesale prices for November, 1927, using 1926 as the basis of 100, are shown in the following table:

	1926	1927		
	Nov.	Oct.	Nov.	Purchasing Power of 1926 dollar in Nov. (cents)
Paper and pulp	92.1	91.6	91.3	109.5

Census of Manufactures to be Changed—A return to the old plan of complete census of manufactures every five years, with the addition of an annual census production and employment of limited scope, is being advocated by the Federal Reserve Board in lieu of the present biennial census of manufactures. In addition to information regarding products it would be desirable to have data also for the more important basic materials used in manufacture.

Trade Practices Abroad—Seventy investigations of trade conditions in foreign nations, which might affect the foreign trade of the U. S., were conducted by the export division of the Federal Trade Commission during the past fiscal year. The inquiries arose from disputes between American exporters and importers, and their foreign customers. Inquiries of this sort are conducted informally, without publicity, and the facts ascertained are reported back to the foreign country through government representatives. In many instances, the outcome of such inquiry is an amicable adjustment by the parties to the dispute. The work has been highly commended as a step toward the promotion of good-will for American products and the elimination of unnecessary criticism and ill feeling toward American traders.

Night Advertising by Aeroplane—Night advertising by aeroplane has been tried out in Germany by a 3-motored plane which flew over Hamburg with the names of advertised products showing under the lower wing and illuminated by current generated in the plane. It is reported that any name or text can be formed and illuminated in this way, and that it can be read from considerable distances.

Japan Proposes to Change Tariff on Pulp—Proposals are to be submitted to the Japanese Diet for change in rates of duty on imports of mechanical and chemical pulp for papermaking, and it is proposed to abolish the present duties of 22 sen per 100 kin on mechanical pulp and 27 sen per 100 kin on chemical pulp, excepting sulphite pulp on which it is proposed to increase the duty to 65 sen per 100 kin.

Standards in Wood Using Industries—Progress accomplished in the standardization and simplification of wood

standards and specifications is shown in a new publication, Standards and Specifications in the Wood-Using Industries, just issued by the Bureau of Standards, including those dealing with paper and paper products. Use has been made of the decimal system of classification of wood and paper which was employed in the National Directory of Commodity Specifications. (No. 79).

BRITISH CORRESPONDENCE

Trade Conditions Favorable

Generally speaking, it cannot be said that the British paper industry has experienced prosperity during the past year; but, in comparison with other important manufacturing industries, it appears in a reasonably favorable light. There have been comparatively few failures, and most manufacturers have increased their output.

Home consumption has increased in all branches, but a disturbing feature is a tendency towards an increase in imports and a decrease in exports. The sales of newsprint and printings in the Colonial markets have weakened a little, and the British position in foreign markets is still precarious.

Discussions are going on in the trade on the possibilities of doing business with South America in esparto papers. One writer on the subject has pointed out that these papers are almost entirely produced in Great Britain and they are certainly outstanding in character, and represent the almost ideal medium for fine printing and pen writing paper. It is questioned whether users in South America will readily turn to a fresh type of paper, and pay the little extra for better qualities. It has been pointed out that the fact that we can sell esparto papers to Japan and India is a good indication of our competitive power, and we are reminded that there is business for the sale of esparto papers still untapped in Australia, New Zealand, South Africa, and even in the United States. It is considered by those with experience of the American market that neither price nor tariff would stand in the way of printers whose characteristic grades of paper are not entirely met by home sources of supply. In any case, in view of the fact that there is some evidence of over-production in the esparto section of the industry, it seems that fresh fields of consumption need to be investigated, especially as new equipment and machinery have been installed in several esparto mills.

As far as South America is concerned, it has been decided that the first essential is to make up sample books designed to meet the exact requirements of the trade, and carried out by one well acquainted with the customs and standards peculiar to the various parts of South America.

It is anticipated that the quotations for wood-pulp will begin to harden on account of shipping difficulties. The last of the season's supplies are now being despatched from the Baltic ports which will soon be icebound.

Paper Mill Official tours U. S. and Canada.—Mr. Thomas Armstead, of Thomas Owen and Company, Limited, Ely Paper Mills, Cardiff, returned to Cardiff last week, after a seven weeks' tour of Canada and the United States. Giving his impressions of his trip, Mr. Armstead has said that some parts of America at least have unemployment problems as acute as in this country. In amplification of this, he points out that in Chicago on August 14, there were 75,000 unemployed, and it was expected that there would be an even larger number in that city during the coming winter. Among the U. S. towns and districts visited by Mr. Armstead, were Seattle, San Francisco, Los Angeles, Arizona, Texas, New Orleans, Louisiana, Washington, and New York.

Australia building experimental Paper Mill.—Following the report in my last month's letter that definite steps are being taken towards producing paper in Australia from hardwood of the eucalyptus type, it is interesting to learn that the proposal to manufacture from Tasmanian hardwoods is taking definite shape, and that it is anticipated that experimental plant will be at work at the beginning of the new year. The paper manufacturing plant that was on exhibition at the Empire Exhibition at Wembley in 1924 has been secured, and is now being installed. Its capacity is one ton of paper a day. The mill is being erected in the center of the great Huon fruit-growing district. It is proposed when the experiments have been proved to be commercially successful gradually to extend the plant to a capacity of 100 tons a day.

Wallpaper Manufacturers make connections in Canada.—At the ordinary general meeting of the Wallpaper Manufacturers' Association held in London recently, the chairman pointed out that the company had invested a considerable sum in the Canadian Wallpaper Manufacturers, Ltd. He said: "For several years, we have been watching the developments of the wallpaper trade in Canada, and, since the war, we have had recurring discussions with different parties interested, but until this year the negotiations did not mature. At the end of last year, we were again approached, and early this year a deputation of your directors visited Canada with the object of establishing relations with the manufacturers of wallpapers in that Dominion. Canada is the only portion of the British Empire outside the shores of England where wallpapers are made. A consequence of our visit was that an amalgamation of the four Canadian manufacturers took place."

Allied Newspapers, Ltd., buy Newsprint Stock—An offer for sale was made recently of £1,500,000 (7,500,000 dollars approximately) 5½ per cent first mortgage guaranteed debenture stock of the Edward Lloyd Investment Co. at the price of 95 per cent. The company has been formed for the purpose of taking over the ordinary shares in Edward Lloyd, Ltd., the largest makers of newsprint in this country. In all, the debenture issue totals £3,500,000, the other £2,000,000 of which have been taken by shareholders in part payment of the purchase price. All the shares in the company (other than 5,007 allotted for cash) have been issued to Allied Newspapers, Ltd., credited as fully paid, as consideration for the unconditional guarantee by Allied Newspapers, Ltd., of the stock offered for sale. Here is another instance of the strengthening of the link between the publishing business and paper manufacturing industry, and further evidence of the tendency to joint control of raw material and finished productions.

Exports—Although, as has already been pointed out, there is a general tendency towards a decrease in exports, as far as the paper trade is concerned, it is considered encouraging that exports as a whole, which are the surest index of national prosperity, have recently been on the increase, so that the total for all trades for November reached over seventy million pounds in value, an increase of 17½ millions over last November, and 9½ millions over November of the previous year. The principal improvements have been in manufactured goods, and papermakers consider that there is hope for the future, and that not very far distant, for experience has shown that a general trade revival very soon shows itself in a bigger bulk of trade for the papermaker.

Trade Prospects—Commenting on trade prospects, one expert in the trade states: "The British papermakers were never better equipped for making first class paper of every description, and at the lowest possible prices. During the past eight years, huge sums of money have been spent in order to bring the mills up-to-date. In some cases, the whole of the steam generating plant has been scrapped, and new boilers with the most improved self-feeding devices installed with turbine engines of enormous horsepower for converting the steam into motive power. There is hardly a mill of any standing that has not had its papermaking machinery thoroughly overhauled and modernized. During the process of turning the old into the new some of the smaller mills, badly situated for the transport of raw materials and finished products, have been forced out of commission, and some of them have ceased to exist, but although from these causes the actual number of mills has slightly decreased, the possible output has been enormously increased."

Program of the Fifteenth Annual Meeting of the Canadian Pulp and Paper Association

To Be Held at the Ritz-Carlton and Mount Royal Hotels, Montreal, January 25th, 26th and 27th, 1928.

WEDNESDAY, JANUARY 25th.

10:00 A. M.—**Woodlands Section**—Mount Royal Hotel. Business meeting for members only. Papers and discussions on logging, forest management and research.

10:00 A. M.—**Technical Section**—Ritz-Carlton Hotel.

Reading of the minutes of the preceding meeting.
Chairman's annual report.
Reports of standing committees:

1—Committee on Technical and Physical Standards.
2—Committee on Power and Drying.
3—Committee on Wood Measurement.
4—Committee on Publications.
5—Committee on Abstracts.
6—Committee on Program.

New Business.

Adjournment for Lunch

2:30 P. M.—**Woodlands Section**—Mount Royal Hotel.

Business meeting for members only.

2:30 P. M.—**Technical Section**—Ritz-Carlton Hotel.

Paper—"Atmospheric Conditions in Paper Mills," by Dr. F. M. R. Bulmer, M. B., B. Sc., Research Specialist, Division of Industrial Hygiene, Ontario Department of Health.

Paper—"Vapor Control in Paper Drying," by H. W. Cowan, M. E., Consulting Engineer, Toronto.

THURSDAY, JANUARY 26th.

10:00 A. M.—**Woodlands Section**—Mount Royal Hotel.

Paper—"Future Wood Supply for the Perpetuation of the Pulp and Paper Industry in Canada," by Dr. C. D. Howe, Dean of the Faculty of Forestry, University of Toronto.

Paper—"Handling Pulpwood—Improved Methods and Machinery," Captain A. A. Schmon, Ontario Paper Co.

10:00 A. M.—**Technical Section**—Ritz-Carlton Hotel.

Paper—"Brief Outline of the Work of the Department of Cellulose Chemistry at McGill University," by Prof. Harold Hibbert, D. Sc., Ph. D.

Paper—"Penetration of Liquids into Wood," by Prof. G. W. Scarth, McGill University.

Paper—"Pressures of Solutions of Sulphurous Acid at High Temperatures," by W. B. Campbell, Forest Products Laboratories, Montreal.

Report of Committee on Nominations.

Adjournment for Luncheon

12:30 P. M.—**Woodlands Section Luncheon.** Mount Royal Hotel. Speaker, S. T. Dana, Dean of the School of Forestry, University of Michigan.

1:00 P. M.—**Technical Section Luncheon.** Ritz-Carlton Hotel. Speaker, R. A. McInnis, General Manager, Anglo-Canadian Pulp and Paper Co., Quebec. Topic. "The Trend of Management in the Paper Industry."

2:00 P. M.—**Woodlands Section**—Mount Royal Hotel.

Paper—"Regeneration of Cut Over Areas," by E. F. McCarthy, U. S. Forest Service.

Paper—"Logging as a Part of Forest Management," by B. E. Claridge, Hammermill Paper Co.

2:30 P. M.—**Technical Section**—Ritz-Carlton Hotel.

Induction of Chairman-Elect.

Paper—"The Cost Accountant and the Technician," by Louis Armstrong, Laurentide Co., Grand 'Mère, Que.

Discussion.

Paper—"A Study of Fourdrinier Wire Life," by Dr. John Campbell and H. G. Wales, Abitibi Power and Paper Co., Iroquois Falls, Ont.

Adjournment

7:00 P. M.—**Cabaret Dinner**—Mount Royal Hotel. (Tickets for the Cabaret Dinner and for the Luncheons may be obtained at the Secretary's Office, 701 Drummond Building, Montreal.)

FRIDAY, JANUARY 27th.

10:00 A. M.—**Annual Meeting of the Canadian Pulp and Paper Association**—Ritz-Carlton Hotel.

Order of Business—

1—Minutes of the Preceding Annual Meeting.
2—President's Annual Address.
3—Reports of Sections:
Board Section.
Book and Writing Section.
Chemical Pulp Section.
Coated Paper Section.
Felt Section.
Mechanical Pulp Section.
News Print Section.
Research Section.
Technical Section.
Tissue Paper Section.
Waxed Paper Section.
Woodlands Section.
Wrapping Paper Section.
4—Secretary's Financial Report.
5—Resolutions.
6—Election of President.

Adjournment

The annual meeting of the News Print Section will be held immediately upon adjournment of the association meeting.

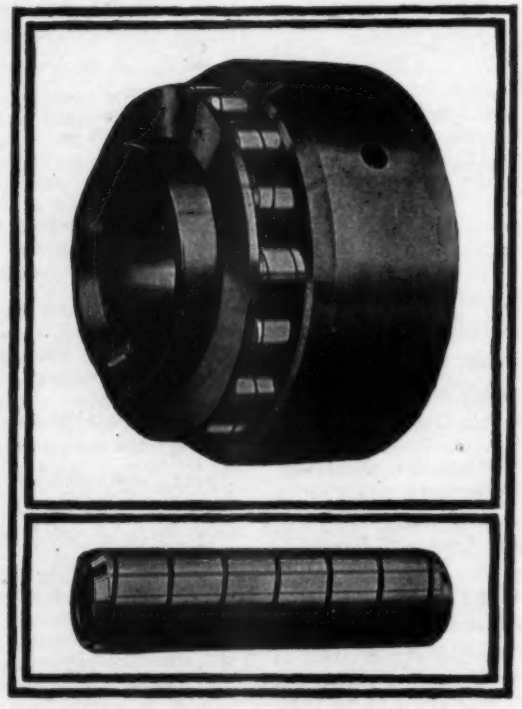
1:00 P. M.—**Annual Luncheon.** Ritz-Carlton Hotel. Guest of honor, Sir Charles Gordon, President of the Bank of Montreal.

7:00 P. M.—The President will entertain at dinner, in the ball room, Ritz-Carlton Hotel, preceded by a reception in the blue room.

A meeting of the News Print Service Bureau will be held at 3 P. M. on Friday, January 27th.

Bearings that Assure Continuous Performance in Paper Machinery

USERS of many millions of Hyatts know they get a full measure of value from them. Hyatts stand the gaff of 24 hour daily service — shock loads and lubricating abuse —that quickly ruin ordinary bearings — because they are built to withstand that sort of usage.



Notice the rollers in the accompanying illustration. They are hollow — helically wound —hardened and ground to close limits.

The slots control oil distribution—carry it to every part of the bearing surface. That is why Hyatts run cool—that is why they are long lived.

The cage holds rollers in alignment—it is strong enough to prevent weaving under load. Bars through each roller are welded to end rings, forming a rigid unit.

You get full line contact with Hyatts—loads are distributed evenly over a wide shaft area. Hyatt bearings cannot freeze—they are built to roll. The rollers being microscopically resilient do not fracture under sudden impact or shock load.

Hyatt bearings in pulp and paper machinery have given years of trouble-free service. Experience has determined that their only attention and expense is an infrequent application of lubricant.

Because the method of mounting Hyatts is constantly checked by Hyatt engineers—housings are sealed against water, dirt and other abrasive substances. This measurably increases bearing life and performance efficiency. Many of the best known equipment builders stand by Hyatts because their advantages have been universally proved in the most difficult service.

Hyatt Roller Bearings are not only adaptable to new machinery but can be applied to existing equipment due to their construction and ease of assembly. Let a Hyatt engineer explain their many advantages.

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SOUTHERN NEWS

The Paper Industry in the South

The year 1928 in the southern cities opens auspiciously. Business is good. The closing year in most industrials showed a profit, and while not so large as desired and in many instances very modest, business is on a good basis. Bank clearings are larger, construction is advanced in some cities and reduced in others, labor is well occupied, farmers have secured good prices for their commodities and aside from the flood events of last spring, there has appeared no great barrier in their progress. Even in the lower valley, recuperation was rapid and most of the cities and towns are in fine condition. Road construction in Tennessee, Arkansas, Texas, Louisiana and other Southern States has been on a grand scale in 1927 and continues in 1928 the same way. These several factors mean something to the paper and pulp manufacturing development that has found progress, too, in the Southern States.

Particularly does highway and railroad branch line construction mean a great deal to factory development. The first mentioned factors more directly affect the consumption of paper and its products in a multiplicity of industries and on a profitable basis.

Sections of Development—In a recent period potent development of paper and pulp industry is found in Eastern Tennessee, in the section about the young and growing city, Kingsport; in Louisiana in the section contiguous to Bogalusa; in Arkansas in the section contiguous to the town of Camden; in Alabama in the section contiguous to Tuscaloosa. West Virginia has large interests of this kind, and Kentucky with its vast raw material resources and proximity to big centers, promises something of development and more or less interest appertains in the Atlantic Seaboard states from one angle or another.

Power Development—The development of water and hydroelectric properties in the Ouachita River section of Arkansas near Hot Springs, at Remmels Dam; in the section of Alabama contiguous to Florence and Sheffield; in East Tennessee contiguous to Chattanooga and in a great many other localities mean much for operative power and were of the most momentous developments of 1927. Power lines in Tennessee, Kentucky, Arkansas and Mississippi now link up many communities both for factory operation as well as lights. The Lone Star State, Texas, in several of its cities and communities has also made real progress in this direction.

Southern I. P. Co.'s Arkansas Mill—Involving more than a million acres in 13 counties of Arkansas, the largest deed has been filed for record in the office of Circuit Clerk in Camden, Ark., by the Southern International Paper Co., which is just completing a $5,000,000 paper mill at Camden. The land which contains much timber has been deeded to the International Paper Co., of which the Southern I. P. Co. is a subsidiary. Allen Curtis, vice president, and F. C. Simmons, secretary, of the Southern organization negotiated the warranty deed. Timber rights, and in many cases the land outright, is located in the following counties, Bradley, Calhoun, Clark, Dallas, Garland, Hot Springs, Montgomery, Quachita, Saline, Union, Jefferson and Pike. Over 100,000 acres were involved in Calhoun county, the largest of the deed. Work of cutting the timber and shipping it to the Camden mill has already started, and actual paper pulp making will probably begin very soon.

The Industry in Louisiana—Along about 1900, English capitalists interested in sugar cane cultivation got the idea that sugar cane after extracting the juice, would be a suitable raw material for the manufacture of paper. A plant was built but it was not a success due to the fact that fermentation took place in bagasse when stored in large quantities. Some ten years later the attention of Northern capital was further drawn to Sugar Cane and another plant was built in New Orleans by the Celotex Co. The purpose was to produce insulating material from bagasse. The operation proved successful and many million square feet have been produced each year. This insulating material is often known as "synthetic lumber" and is extensively used as heat insulation in the walls of buildings. From the period of the discovery that paper could be made from wood, developments were rapid, but until 1910 the manufacture of paper was regarded as a Northern industry, no paper being produced in the Southern States. The wood in the South containing more or less resin was one of the obstacles to be mastered and other difficulties were encountered in the pulp treatment.

Early Paper Experiments—Early experiments in the use of Southern pine for the manufacture of paper were made at Orange, Texas in 1907, also at Roanoke Rapids, N. C. in 1908. In 1910, the two mills had a combined production of 30 tons per day, and a few years later this had grown to 800 tons per day in the several southern states, with Louisiana in the forefront producing 360 tons of kraft paper, about one-sixth of the total daily production of kraft paper in the country at that period of development.

In 1909, work was started on construction of a plant at Bogalusa, La. for the utilization of saw mill and logging refuse, and it was rebuilt and perfected in 1911-12 in order that the sulphate process for pulping wood could be installed. This was virtually the beginning of the manufacture of paper from pine in Louisiana, and in the year 1925 the industry had grown so in Louisiana that there was a daily production of 360 tons of kraft paper.

Cellulose is extensively used in the rayon silk industry as well as in the paper industry, and there is a potent development in mills of the former character at the present time, at Old Hickory, near Nashville, Tenn.

Good authorities predict that while yellow pine has so far been used in paper manufacture in Louisiana, gum wood, too, will come to be used for newsprint, book and writing paper. There is an abundance of these two woods in Louisiana and other states adjacent. The pulp and paper industry of Louisiana in a recent period has been consuming about 1,400 cords per day or 420,000 cords per year, equivalent to 210,000,000 board feet. This would seem to place some limitation on the life of the paper industry, but reforestation, changing conditions, interstate replenishment may all make a different story.

Commercial Trade Progress—The year 1927 witnessed the establishment of a number of paper box factories manufacturing various classes of paper boxes in southern cities, the establishment of several new factories in corrugated lines, and a vast development in stores, retail and wholesale, handling paper products for the printing, shipping and commercial trade. With these, a potent development in handling business has been found in the commercial motorized truck, and both facility and volume have been realized.

Mr. L. T. Murphy, formerly superintendent of the Franklin Board & Paper Co., Franklin, O., is now connected with the Tennessee Board Mills, Chattanooga, Tenn. in the same capacity.

Changes in Pennsylvania Salt Executives

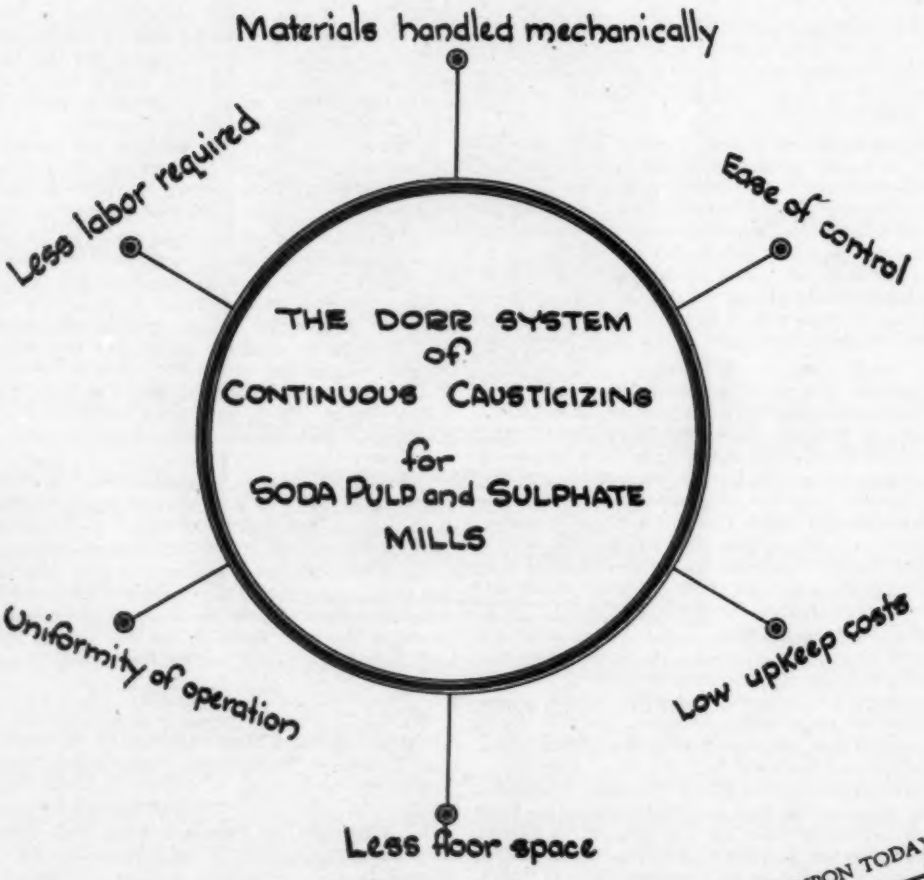
The Pennsylvania Salt Manufacturing Co. announces the following changes effective January 1st, 1928:

N. Emory Bartlett, has been elected a vice-president, and will also continue his duties as general sales agent; Y. F. Hardcastle, who has been connected with the Wyandotte plant for a number of years has also been elected a vice-president, and will have charge of the manufacture of chlorine products at the present plants at Wyandotte and Menominee, Mich., and will also superintend the construction of the new plant at Tacoma, Wash.

In appreciation of services during his connection as engineer with the News Print Service Bureau, George D. Bearce was presented with a traveler's bag by R. S. Kellogg, secretary, the presentation being made at a reception tendered to the office staff of the News Print Service Bureau at Mr. Kellogg's home in Yonkers, N. Y. on December 17.

6 Points of Interest

to Soda Pulp and Kraft Mill Superintendents ~



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INVESTIGATION TESTS DESIGN EQUIPMENT

WISCONSIN NEWS

Courses in Pulp and Paper Making

After a year of survey and preparation, classes in paper and pulp manufacture are now under way in a number of vocational schools of the various paper and pulp centers of Wisconsin. Started in the cities of Appleton, Kaukauna, Neenah and Menasha, the movement was extended to other paper mill cities of the Fox River Valley and finally to those of the Wisconsin River Valley.

The courses were organized by H. G. Noyes, formerly connected with a paper mill in Maine and now state co-ordinator in paper and pulp instruction for the Wisconsin Department of Vocational Education. In some localities, a part of the instruction is given in the vocational schools supplemented by further instruction in the various mills. There are courses that might be called training for foremanship, and courses for young men who expect to follow the papermaking trade after they finish school. In Appleton, a course in first aid training is preceding the course in papermaking.

Section of Fox River Dam Completed

About half of the new $100,000 middle dam across the Fox River at the Fox River Paper Co. mill in Appleton has been completed, although the sluice gates have not as yet been set up. Construction of the remaining section will be undertaken shortly. Cold weather and heavy snow have been hampering the work.

The completed section of the new dam, which will be used by the Fox River Paper Co., the Patten Paper Co., the Appleton Woolen Mills, and the Appleton Machine Co., must be opened and the coffer dams removed so that water flowing over the old middle dam will have an outlet. Removing flash boards on the south side of the old dam and permitting the overflow to pass down the south side of the river bed probably will solve the problem. Such procedure will enable erection of the coffer dam on the north side of the river and permit the steam shovel to dig down to bed rock. An outlet for water through the old dam is necessary to keep the water above the dam low enough so that it does not interfere with the tailrace of the Wisconsin-Michigan Power Co. power house.

A patent of interest has been granted by the United States government to Charles Proctor, No. 3 machine mechanic of the Biron Division paper mill of the Consolidated Water Power and Paper Co. of Wisconsin Rapids. The patent is on a mechanical device for conveying paper over the presses. The invention is said to have proved invaluable after thorough tests. Several minutes are saved on each wet end break and there is no maintenance cost involved. A sliding blade against the press roll cuts off a web from a part of the roll and shifts it to another part of the machine without breaking the separated fabric.

Crowded conditions in the Newaygo Timber Co.'s offices on the second floor of the Whalen Bldg., Port Arthur, have necessitated a change of location to the south ground floor of the building, space formerly occupied by the Bank of Montreal. The company is a subsidiary of the Consolidated Water Power and Paper Co., of Wisconsin Rapids, and employs in the woods and other enterprises nearly 600 men. Its working limits extend from Minnesota to the Algoma Central Railway in the East. The company operates four large camps east of Port Arthur and maintains a fleet of tugs and barges with which pulp is towed to Consolidated's Thunder Bay paper mill in Port Arthur and to its Wisconsin mills.

The true Christmas spirit was beautifully exemplified by the employees of the Kimberly-Clark Co. at Kimberly, who decided to use their safety bonus of $1,445 to purchase bonds for the widows and families of the Kimberly mill disaster victims. Following the beater room collapse all departments decided to call it a mill accident and all start over again. All departments having 300 or more years of man days of safety were entitled to a $5 award for each employee. It is this award that was handed over to the families of the victims.

Members of the special interim committee of the Wisconsin legislature appointed to make a survey of all developed and undeveloped power sites in the state in connection with the proposed program to acquire power sites, have finished their investigation and will make a complete report soon. Several Wisconsin paper mills that in the last few years undertook to build or rebuild dams met obstacles in the so-called recapture clause of the Wisconsin water power act.

Tomahawk Co. to Plant Trees

The Tomahawk Kraft Paper Co. of Tomahawk, Wis., is the second paper company in Wisconsin to undertake the experiment of reforestation on a somewhat extensive scale. C. G. McLaren, chief forester of the Tomahawk mill, announced a few days ago that sixty acres of cutover land near Tomahawk will be planted with Norway spruce seeds next spring, and that a nursery will be started in which to grow about 20,000 two-year-old trees for transplanting on the previously mentioned cutover land.

A low growth of trees on the sixty acres will be left standing to serve as a cover and the seed will be sown between. Norway spruce will be experimented with, rather than jack pine, because of the greater commercial value of the former. White pine and white spruce are slower in growth than Norway spruce. Mr. McLaren believes reforestation is necessary for the paper industry in Wisconsin for the steady supply of cheap raw material for the state paper mills.

The Menasha Paper Mills Co. of Menasha, manufacturer of strawboard, has begun repiling its yards with straw. A considerable amount was destroyed by a recent fire. Straw is now arriving at the mill at the rate of about eight carloads a day.

The Interlake Pulp and Paper Co. of Appleton has found a way to prevent freezing of pulp in transportation during the winter. The company is now using refrigerator cars for transportation of heavily soaked pulp. There usually is a surplus of these cars in the winter months.

Al Kroes of the Employers Mutual Liability Insurance Co. of Wausau, Wis., recently gave a lecture on safety to employees of the Peshtigo Paper Co. at Peshtigo.

Explosion in Nekoosa Mill

On December 12th an explosion occurred in the plant of the Nekoosa-Edwards Paper Co., Nekoosa, Wis. Mike Kirst, a cook and Emil Freiberg, a millwright were killed.

A Morterud super-heater attached to a sulphate digester located on a bridge above the ground floor blew off the bottom covering. The explosion raised the entire heater of five tons, and caused it to crash through the bridge to the floor below. The explosion tore the liquor circulating pipe from the base of the digester, throwing parts of the pipes and fittings in all directions and allowing the cooking liquor and chips to gush out with the full force of the digester pressure.

The men killed in the explosion were on the lower floor under the bridge on which the heater was located and about twenty feet from the base of the digester. It was apparent that they had both been killed by pieces of iron.

The cause of the explosion is unknown. The digester had been under cooking process for something over an hour and the cook of the digester was about one-half finished when the explosion occurred.

The property of the defunct Valley Paper Mills Co., near Neenah, is to be sold. The company was organized a half dozen years ago and began to build a mill in 1921, but construction was interrupted during the financial depression of

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1921. An effort to reorganize and refinance the concern last year failed. The construction work did not go beyond the basement. There are about twenty-five lots and a few small buildings.

Dr. Otto Kress of the Thilmany Pulp and Paper Co. of Kaukauna, has patented a process for bleaching, which is now being used in the mill of the firm with which he is associated. Through his process, a lighter colored kraft pulp can be made without any diminishing of the strength of the pulp.

A new bridge will be built this year at Tayco Street in Menasha at the Menasha Printing and Carton Co. mill on the Fox River. The former gymnasium of the mill will have to be removed to make way for the structure.

The production of paper and pulp in Wisconsin is now 2,200 tons per day, or enough to fill 110 box cars, according to statistics compiled by the Wisconsin Manufacturers' Ass'n. There is a total of sixty paper and pulp mills in thirty-two Wisconsin cities, employing 17,000 workers who receive an annual payroll of $21,000,000. The State ranks third nationally in paper and pulp production.

No bids were received at the advertised sale of the Peshtigo Paper Co. of Peshtigo. The mill will continue to be operated for the present by the receiver, P. M. Allen.

Dan Hardt, assistant to the President of Lawrence College, Appleton, has joined the sales staff of the Neenah Paper Co.

Twenty-six persons employed in the service departments of the various Wisconsin mills of the Kimberly-Clark Co., had a meeting last month in an Appleton hotel. One of the principal subjects discussed was Responsibilities and Possibilities of a Well Organized Service Department. A. S. MacArthur led the discussion.

States Enact 130 Forestry Laws in 1927

One hundred and thirty new forestry laws, or amendments to prior acts, relating to forest taxation, fire prevention and reforestation have been passed by state legislatures in the last year, it is shown by a survey of 1927 forest legislation just completed by the forestry department of the National Lumber Manufacturers Association. California was the most active state in such legislation followed closely by Wisconsin and Minnesota.

New laws, or amendments to old statutes, relating to the problem of forest taxation were passed by nine states, namely, Maine, Michigan, North Carolina, Minnesota, New Hampshire, New York, Ohio, Wisconsin and Indiana.

Six states enacted laws providing for the establishment of state boards of forestry and state foresters. They are Florida, Rhode Island, South Carolina, West Virginia, Delaware and Kansas.

Included in the new legislation relating to forestry in California are bills providing for additional forest parks, reforestation of public lands, provisions for courses in forestry and amendments to the penal code relating to the prevention and control of fires and the cutting and destroying of timber.

Wisconsin enacted a law which provides for the establishment of a state conservation commission among the duties of which are to establish state forests, state productive nurseries, experimental stations and the maintenance of fire fighting establishments. Wisconsin's new tax law establishes a method of taxing forest lands on a yield basis.

Minnesota, through the provisions of new legislation, will create state forests out of certain state lands. A yield tax law under provisions of the recently approved forestation amendment to the state constitution has also been passed by Minnesota.

Logging on state lands must be done in such manner as to insure natural reforestation according to a new law enacted by Washington.

A new law in Oregon authorizes the State Board of Horticulture to establish control areas for the protection of horticultural, agricultural or forest industries from diseases, insects, animals and noxious weeds.

MICHIGAN NEWS

DeWolfe Addresses Cost Ass'n on Training

At the November 30th meeting of the Kalamazoo Valley Division of the Cost Ass'n., held at Kalamazoo, C. E. DeWolfe, state manager of the International Accountants Society, gave an address on "The Value and Importance of Training."

The speaker first covered the general training, which the individual receives from childhood, through school days, and up to the time he goes out to make his way in the world. He then took up the cultivation of the mind as applied to business from two points of view, that of the employer and that of the employee.

Speaking of the employer, it was brought out that the manufacture and exchange of commodities between men has been a gradual evolution. In the beginning, all effort was individual, the cobbler made shoes, the weaver made cloth, the miller made flour. He used what he needed of his own manufactured wares and sold or exchanged the surplus for other wares that he did not make himself. As time went on, business became more and more complicated; the employer's problem increased accordingly, and he more and more appreciated the value and importance of training among the employees. Today, business is highly organized and the unit of business has grown from the one-man shop to such institutions as the U. S. Steel Corp. with its two hundred seventy-five thousand workers; the railroads; the telephone companies; the packing companies; and hundreds of others, each with thousands of employees. In the last analysis, it is manpower that decides the fate of any business. Trained men are needed and it is the employer's constant effort to find the trained man for the job.

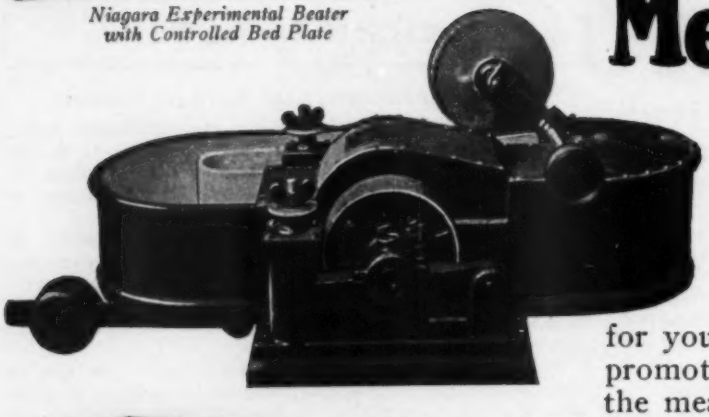
The employee of today, the speaker declared, is essentially a salesman. He has a commodity for sale, his skill and ability to do for another that which the other lacks either the time or skill to do for himself. It follows, of course, that the price he receives for his services, will largely depend upon their worth to the buyer. The world is full of misfits and half trained men who can never rise very far until they are better equipped, and this is especially true in business. Mr. DeWolfe quoted from "Forbes" the statement that there are many openings for the able, energetic, ambitious young man. Every year thousands of high salaried executives either retire or die. New enterprises are launched every day of the year. The competition for these opportunities is not great. There is a scarcity rather than a surplus of employees conspicuously fit for heavier responsibility. A lamentable large number of workers are content to jog along in their accustomed ruts. It is no more difficult to rise today than it used to be.

It is true that the schools, colleges and universities are turning out greater numbers of graduates every year; but it is very doubtful if the percentage of genuinely ambitious, resolute, purposeful young men is as large as formerly. Pleasure is chased more furiously; home study, home reading, home counsel have suffered by the advent of jazz music, the radio, the unprecedented attention given to sports; the enormous increase in gadding made possible by the ubiquitous automobile. The head of a very large company, furnishing an excellent educational course to men engaged in business, recently stated that it is becoming very much harder to enroll and to get men to study perseveringly than it was a few years ago.

A man's earning capacity depends largely upon his training, and the comforts and advantages he can give his family depend upon his earnings. The path of the untrained man

The Means for Accurate Measurements of Facts

Niagara Experimental Beater with Controlled Bed Plate



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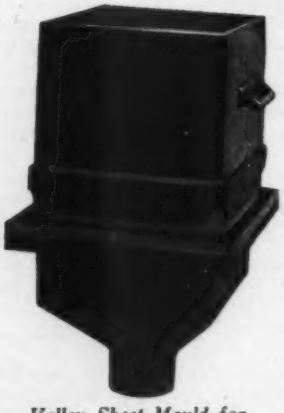

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gets harder all the time. As civilization becomes more highly developed, competition becomes keener and the struggle for existence more severe. Under such conditions, the untrained man inevitably goes down to defeat before the trained man.

Receiver for Bradford Mill Files Report

In connection with the suit for dissolution of the Bradford Paper Co., final report of the receiver, E. A. Campbell has been filed in circuit court, and order has been made by Judge George V. Weimer approving the report and directing discharge of the receiver when all receipts, vouchers, and paid checks have been filed in court.

The report shows that all accounts receivable, except some that are not collectible, have been paid, that there is no indebtedness remaining, and $733.22 is left for disbursement pro rata among the stockholders.

Sutherland Paper Co.'s bimonthly dividend check for December carries an extra one per cent in addition to the regular 1½ per cent. This places the stock on a 10 per cent basis for the year. This concern has been very busy the last year, production being the largest in its history.

Bryant Paper Issues New Bonds

The Bryant Paper Co. announces the issue of $1,000,000 in 6 per cent first mortgage sinking fund gold bonds, dated January 1, 1928, and maturing serially, the final being due January 1, 1948. The bonds are priced at 101 and accrued interest to yield over 5.90 per cent. The denominations are $1,000, $500, and $100.

The series is underwritten by the Union Trust Company, Chicago, and will be marketed through that agency and in part by the four local banks, Olmsted and Mulhall and George Thomson, bond houses.

According to the statement of the company as of November 10, current assets are $3,219,265.64 and current liabilities $695,305.17. Reserves amount to $378,151.24. The issue provides for the establishment of a sinking fund with which to retire the bonds. The issue will provide funds for a proposed expansion program.

Port Huron Mill Expands

The Port Huron Sulphite & Paper Co., Port Huron, Mich., is expanding and making improvements which will increase its production 75 per cent. A new building has just been completed, which is 75 ft. by 170 ft., and this will be used as machine room and finishing room.

An order has been placed with the Beloit Iron Works of Beloit, Wis., for a new machine of the latest, most modern type; straight fourdrinier, wire width 132 inches. This machine is being installed to round out and complete the Mitscherlich papers which the company manufactures. Its present product is confined to a machine glazed and cylinder papers, but with the new machine, it will be possible to furnish a complete line of machine glazed, straight fourdrinier and cylinder products made from genuine Mitscherlich Sulphite of the company's own manufacture, with a range of weights from a 10 pound tissue up to a 15 point tag.

J. D. Byrne, vice-president and general manager of the Standard Paper Co., Kalamazoo, is still in the hospital as a result of a recent automobile accident.

The Central Paper Co., Muskegon, announces the election of H. A. Castle, Potsdam, N. Y., as secretary to succeed R. Bradford Williams, New York, who has resigned. Mr. Castle will reside in Muskegon.

The Michigan Division of the American Pulp and Paper Mill Superintendents Ass'n held its December dinner session December 15 at the Park-American hotel. Homer Stafford superintendent of the Hawthorne Paper Co., addressed the meeting.

Kalamazoo Stationery Co. Development

Development of a program that, when completed, will greatly increase the output of the Kalamazoo Stationery Co., is now in progress at that plant, according to John Vincent, general manager. The concern has recently erected buildings having over 100,000 sq. ft. of floor space to facilitate packing and shipping. One is a modern type daylight structure, extending north from the present main plant and having sidetrack facilities from the Chicago, Kalamazoo, and Saginaw R. R. The second structure is an addition that faces Harrison St. and will afford much greater capacity for loading and unloading trucks.

In the manufacturing department proper, a great many changes are being made, mainly the re-locating of machinery to provide for much greater efficiency in production.

A program is being worked out for future production methods that will be as complete and far reaching in its results as any that has ever been undertaken in any stationery plant in America. Every manufacturing operation will provide for a forward movement, similar in certain details to those found in the modern automobile plant. There will be no backward steps, no lost motion. The same plan was put into effect in the St. Joseph, Mo., plant of the company and worked out splendidly.

Comparatively few residents of Kalamazoo who have considered the Kalamazoo Stationery Co. as makers of stationery and tablets realize this concern has added a new department, that of making greeting cards, which promises in a few years to rival other units in value of its output. During 1927 there were over 16,000,000 cards manufactured and sold. Work has started on the 1928 program and it is expected that sales next year will exceed 30,000,000 cards.

Paper Technologists' Club Meets

The third regular meeting of the Paper Technologists' Club was held at the Columbia Hotel, Kalamazoo, December 7, 1927. Following the dinner, the usual reports were given and the business of the club dispensed with.

James Boynton, of the Department of Chemistry, Western State Teachers' College, Kalamazoo, was the speaker of the evening. Mr. Boynton gave a very edifying presentation of the elementary theory underlying hydrogenion concentration. The subject was presented so clearly that all present agreed more information was obtained from Mr. Boynton's talk than the average individual could secure from hours of study.

The Kalamazoo Division Cost and Technical Association held its January meeting Thursday evening, December 29, at the Columbia hotel, Kalamazoo. Dinner was served, followed by a talk on "Drying Paper," by Charles Barton, Jr., of the technical department of the Michigan Paper Co. C. E. Torrance, superintendent of personnel of the Bryant Paper Co., booked to speak on "Central Control of Personnel," was ill and unable to appear.

Paper Mill Employees Enjoy Yuletide Season

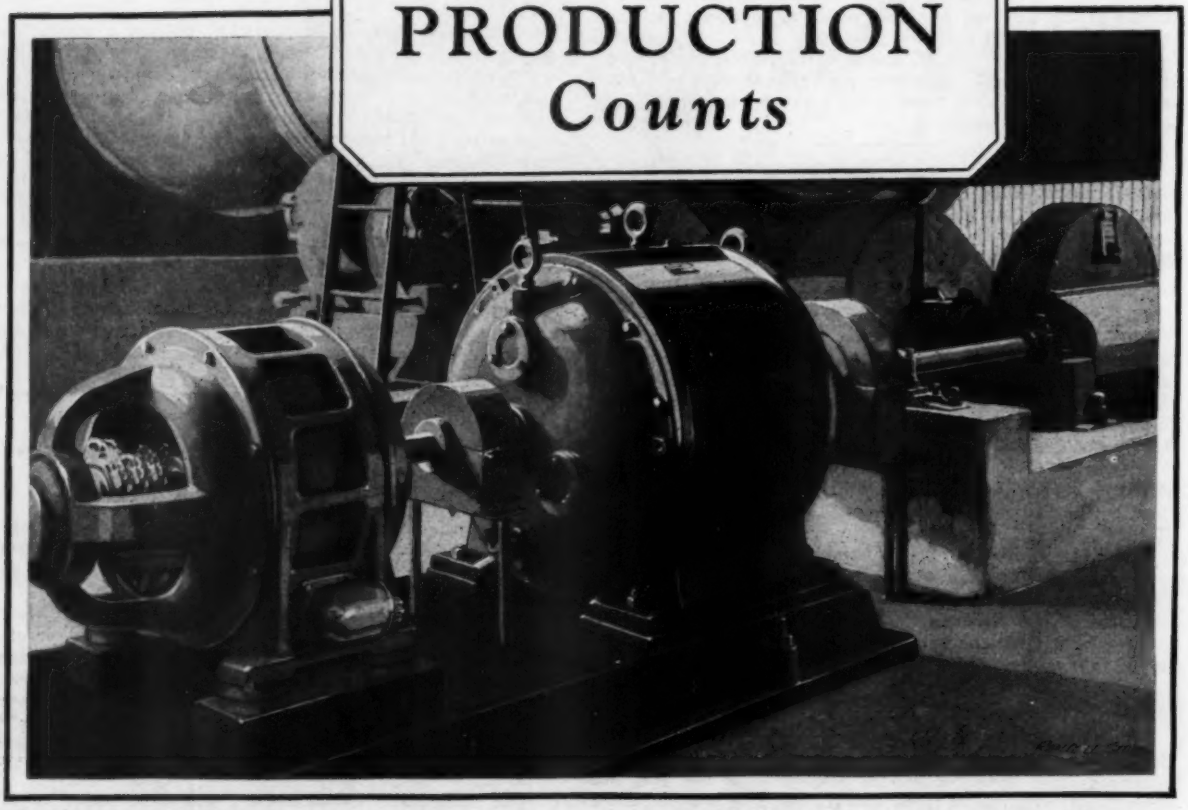
Christmas parties given by Kalamazoo paper mills were among the outstanding events of the holiday season. The spirit of peace and good-will prevailed at these gatherings which were attended by a larger number of employees than in previous years.

The Bryant Paper Co. was host to all employees and their families, and the celebration continued throughout two evenings to take in all divisions and the general office. There was entertainment and refreshments, and, of course, a Christmas tree and presents for the children.

The Standard Paper Company employees and wives were entertained with a banquet at the Park-American Hotel. Several officials of the company spoke, and W. J. Lawrence of the Western Paper Makers Chemical Co. gave an address on the spirit of good-will in business.

The Kalamazoo Vegetable Parchment Co. gave its sixth annual Christmas celebration in the company's community house. There was the usual merriment and an inspiring address by Dr. Frederick Shannon of Chicago. An interesting

Where CONTINUOUS PRODUCTION *Counts*



In this large Portland Cement Company, the mechanical equipment of which is perhaps unsurpassed, close to a hundred Jones Spur Gear Speed Reducers are driving conveyors, elevators, kilns, coolers and other slow moving machines.

Continuous production must be maintained on an economical basis. Therefore the preference of this company's manufacturing executives is for Jones Speed Reducers. Actual experience with many types of reducers has segregated Jones Reducers from the rest for reliability and economy.

Installation is simple and costs less than other methods of stepping down motor speeds. The motor and reducer come mounted on the same cast-iron base. Perfect alignment is assured. The balanced straight line drive conserves power. Exposed belts, gears and chains, so menacing to workmen, are eliminated. The reduction gears are inside a dust-proof housing. They operate in an oil bath—under ideal conditions. No attention is required other than occasional refilling of the oil chamber.

The lowered costs of installation, of transmitted power, of upkeep, of space and safety quickly repay the initial investment in Jones Speed Reducers.

Jones Speed Reducers

W. A. Jones Foundry & Machine Company

Main Offices and Works: 4436 West Roosevelt Road, Chicago

Branch Sales and Engineering Offices:

New York Cleveland Milwaukee Pittsburgh Buffalo Detroit
Birmingham St. Louis Cincinnati Peoria Los Angeles San Francisco

feature of the program was the bestowing of honors to the company's employees having ten and fifteen year service records.

November production at the plant of the Central Paper Co., Muskegon, averaged 108 tons a day, according to H. D. Eliason, general manager, and sets a record in that regard. At this time the concern is employing 438 hands and is working steadily on a daily three-shift basis. Despite certain economies undertaken of late to meet lower price conditions, the concern has been able to retain practically all its regular employees.

The Consolidated Paper Co., Monroe, is erecting a three-story and basement building, which will cost about $500,000 when completed. It will be of concrete and steel construction, 200 ft. wide and 700 ft. long. It will house a garage in the basement, a shipping room on the first floor, a box factory and cutting department on the second floor, and a printing department on the top floor. The present box factory of the company will be transformed into a dead storage building.

Walter S. Hodges

Walter S. Hodges, widely and favorably known in the Kalamazoo River valley district, passed away recently. Mr. Hodges was 73 years of age and for a number of years was employed by different paper mills in the state.

In 1887 Mr. Hodges entered the employ of the Bardeen Paper Co., Otsego, and after twelve years returned to Kalamazoo to organize the Superior Paper Co. He continued as president and general manager of that concern until it was absorbed by the Bryant Paper Co. He also played an important part in the reorganization of the Watervliet Paper Co. He retired many years ago.

PACIFIC COAST NEWS

Union Bag & Paper Co.'s Tacoma Pulp Mill

In a previous issue, announcement was made that the Union Bag & Paper Co. would build a sulphate pulp mill at Tacoma, Wash. Plans for this mill are now progressing favorably and embody many points of interest. A $3,000,000 issue of 6% bonds of the Union Bag & Paper Power Co., a subsidiary of the Union Bag & Paper Co., is being offered to provide funds for financing the new mill.

The initial plant will have a rated output of about 120 tons of pulp per day, but in the design consideration is being given to possible future requirements which may call for double or treble the output of the original plant. Sawmill refuse from a lumber company adjoining the mill site will be used to a large extent in pulp manufacture and is expected to result in manufacturing economies seldom approached in kraft pulp practice. The entire output of the new mill will be shipped by water to the Hudson Falls, N. Y. plant of the Union Bag & Paper Co.

Hardy S. Ferguson, of New York, with the co-operation of the company's own engineering staff is designing the plant. While the general arrangement of the pulpmaking part of the mill will follow conventional lines, there are many features of the chemical reclaiming plant which will be carried out to a marked extent, notably in the handling of the black liquor, the clarifying and recausticizing of the green liquor and the reburning of the lime mud.

Swenson multiple effect evaporators will be used for concentrating the black liquor before it is burned in a Wagner furnace and reduced to the molten condition in a single continuous operation. Continuous green liquor clarifiers, lime slaking equipment, causticizers and thickeners are being furnished by the Dorr Co., which will also supply Dorreo vacuum filters for dewatering the washed lime mud before it is reburned in a rotary kiln.

This mill will undoubtedly be followed with great interest by the pulp and paper industry, as it will be one of the largest and most modern of its type in the increasingly important Pacific Northwest. Should additions be made within the next few years to bring the output up to the ultimate, for which tentative plans are being made, this plant may easily become the largest producer of sulphate pulp in the world.

The Pacific States Pulp and Paper Co., Aberdeen, Wash. has acquired from Phil S. Locke, a thirty acre tract at Aberdeen bordering the Chehalis River above Junction City. The Grays Harbor Commercial Co.'s mill is just across the river from this site. Officials of the company have announced that construction of a 100 ton pulp mill will be started next summer.

In connection with the 100 ton pulp mill now under construction by the Grays Harbor Pulp Co. at Hoquiam, Wash., the Zellerbach interests may build a 200 ton paper mill to cost approximately $6,500,000. This construction hinges upon obtaining a contract for 20,000,000 gallons of water daily from the Grays Harbor cities.

Cutler-Hammer Opens Pacific Coast Offices

After January 1st, 1928, the Pacific Coast Offices of the Cutler-Hammer Mfg. Co., Milwaukee, Wisconsin, manufacturers of electric motor control apparatus and allied lines, will be handled by their own Pacific Coast sales offices, at 970 Folsom Street, San Francisco; 229 Boyd Street, Los Angeles; 2203 First Avenue, South, Seattle.

The new sales district will be in charge of Mr. Fred H. Oberschmidt, a member of the Cutler-Hammer organization for over fifteen years. Associated with Mr. Oberschmidt at the San Francisco headquarters office will be Mr. A. A. Tuffert and Mr. George P. Stone. Mr. Thomas N. Bristow will be in charge of the Seattle Office and Mr. Edward G. Nelson of the Los Angeles Office.

Complete stocks of standard items in the Cutler-Hammer line will be carried at all Pacific Coast offices. The line is very extensive, including all types of A. C. and D. C. Motor Control, The "Harland" Electric Drive for paper machines, Magnetic Clutches, Lifting Magnets, Magnetic Brakes, "Thomas" Gas Measuring Instruments, Motor Operated "Dean" Valve Control—and a complete catalog of Wiring Devices and special switches.

Special arrangements have been completed whereby production and shipment of special equipment for the Coast, built in the Cutler-Hammer factories at Milwaukee and New York, will be given preferred attention.

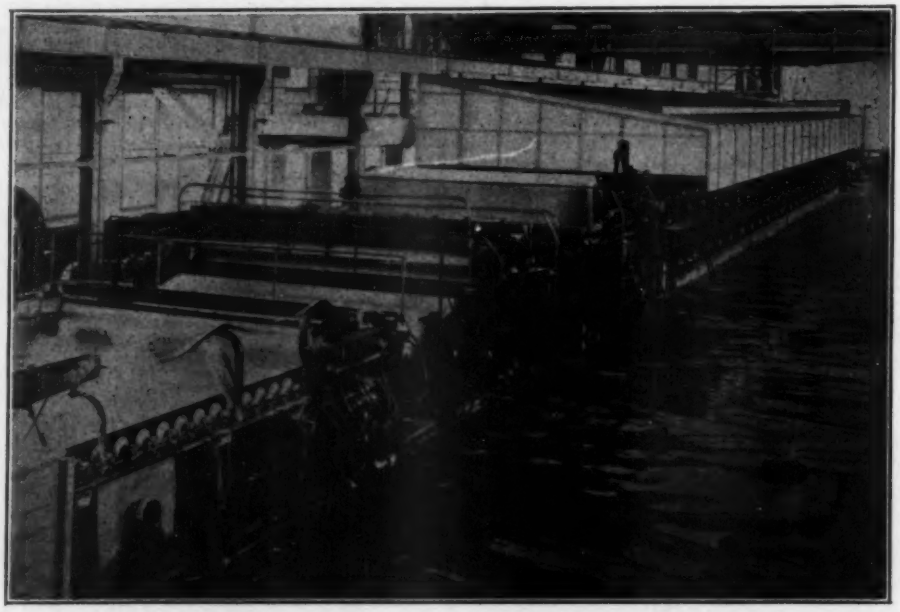
OHIO NEWS

Crystal Tissue Company News

Safety Program Organized—Z. W. Ranck, president of the Crystal Tissue Co., Middletown, O., entertained officials and foremen of the company at dinner December 13 for the purpose of formulating plans for organized safety work throughout the plant. The plan was explained in full by C. G. Barth, safety engineer of the Industrial Commission of Ohio, and was unanimously sanctioned by all present. A personnel committee was appointed with E. E. Grant as chairman. This committee will co-operate with the department heads, and much effective work is expected in the way of reducing accidents and promoting health among employees.

Crystal (White) Fourdrinier Tissue—This name which was suggested by E. A. Clare, an employee of the John Leslie Paper Co., Minneapolis, Minn. was selected from 700 in the recent contest conducted by the company to find a suitable name for its new tissue. Mr. Clare won the $50.00 prize. The contest has already drawn the attention of the trade to this new product.

After January 25, 1928, the Engineering and Development department of the Keyes Fibre Co., Inc., will be located in a new building adjacent to the present plant at Waterville, Me.



Have YOU ever seen a better record?

Extract from a letter from
The Brompton Pulp & Paper Co., Limited
dated October 12th, 1927

"The Machine was purchased from Charles Walmsley & Company, on March 26th, 1926—and the construction of the buildings was commenced on May 1st, 1926. The first merchantable Newsprint was shipped from the Mill on January 28th, 1927—and the average daily production for the past eight months is as follows:—

February	53.6 Tons
March	87. Tons
April	97.4 Tons
May	99. Tons
June	101.7 Tons
July	104.6 Tons
August	107.8 Tons
September	106.4 Tons
and October up to date	108.6 Tons

We would point out that this Machine is operated entirely on 32# Standard Newsprint."—BROMPTON PULP & PAPER CO., Limited.

Charles Walmsley & Co.
(CANADA) LIMITED

Works
Longueil, Que.
Canada

Office
Montreal, Que.
Canada

Canadian News

Paper Importations Warrant Investigation

Mr. Louis Lemieux, who has been engaged by the Canadian Pulp and Paper Ass'n to investigate the extent and effects of importations of foreign paper into Canada, is finding a constantly widening field for his efforts. He has discovered an unexpectedly large number of cases where bulletins, folders, etc., have been issued by Canadian business, banking and brokerage firms, printed on imported paper. In several cases, the use of a foreign paper had not been authorized by the customer. It appears, furthermore, that the more regular use of the stickers prepared and distributed by the Canadian Pulp and Paper Ass'n requiring that printing be done on Canadian paper would eliminate the majority of such infringements of the courtesy of business that ordinarily pertains in what might be called neighborhood helpfulness.

Consumption of Canadian Newsprint Increasing

One of the soundest factors lying behind the Canadian newsprint industry and one that tends to provide a degree of stability to consolidations such as that of the Abitibi-Spanish River group, is the steady increase in the consumption of Canadian newsprint year after year. Indeed, this industry is almost unique in this respect. Between 1921 and 1927 the totals of production, and also sales to an almost equal extent, have gone up year by year from 655,590 tons for the ten months to October 31st, to 1,710,406, the latter total covering the 1927 period.

Usually the growth in production and consumption of Canadian newsprint has been due chiefly to the increased circulation of newspapers in the United States year by year, the majority being now dependent on Canadian mills for their supplies. This year the total consumption across the border is only slightly up, but Canadian mills are producing and selling far more than last year just the same. For ten months to the end of October Canadian production was up 161,184 tons over the same period of last year, but this growth was only secured by an almost equal decline in the output of the United States mills.

The total production of the two countries was only 9,500 tons above the preceding year, the Canadian mills winning out through their economic advantages in adequate supplies of water power and timber limits. These advantages should grow steadily, and Canadian mills promise to play a larger and larger part in satisfying the requirements of the world's largest newsprint market, the United States.

The Eibel Process Co. has made a satisfactory settlement of its claim against a group of Canadian newsprint manufacturers who have used the Eibel patent in the past. It is understood that a very substantial amount was paid.

Increase in Hydro-Electric Installations

J. T. Johnston, director of the Water Power Branch of the Department of the Interior at Ottawa, in his annual report recently issued, gives some astonishing figures relative to the growth of water power development in Canada. He states that by the end of 1927 the total installation of water power plants in Canada was 4,883,000 h.p., and that if the present rate of increase continues, it will easily pass the 5,000,000 mark by the end of 1928.

Two of Canada's rapidly expanding industries, pulp and paper, and mining, are becoming tremendous users of hydro-electric power. The pulp and paper mills, it is now estimated, have a total hydraulic installation in connection with the mills themselves of 526,731 h.p., while the additional hydro-electric energy purchased by this industry from central electric stations is estimated at over 831,000 h.p., making a total utilization of 1,358,052 h.p. Indicating the rapid growth of hydro-electric development in the Dominion, it is pointed out that in 1900 the total installation amounted to only 170,000 h.p. During the subsequent decade the development grew to 975,000 h.p., at the close of 1914 it was 1,946,000 and at the end of 1920 it had increased to 2,508,000.

As further evidence of Canada's present potentialities, Mr. Johnston states that it is not correct to subtract the total installation at November 1st (4,883,000 h.p.) from the totals of available powers to determine what power remains undeveloped, as investigation has shown that throughout the Dominion the installation at developed sites exceeds the estimates of ordinary six-month power at such sites by about 30 per cent. On this basis the total recorded resources of Canada would warrant the installation of about 43,000,000 h.p. In other words, the present turbine installation represents slightly more than 11 per cent of the total resources. The total capital invested in the water-power industry in Canada is estimated to be $900,000,000, or more than that for any other single manufacturing industry. The corresponding figure in 1910 was $121,000, showing an increase of over 600 per cent in 17 years.

Newfoundland Tightens Labrador Timber Leases

Newfoundland is tightening up its administration of the Labrador territory, ownership of which was confirmed to it by the Privy Council recently, and it is reported that the license and lease holders in the territory have been notified to pay up license fees or suffer cancellation of their licenses. Prior to the decision of the Privy Council, Newfoundland issued licenses for timber, pulpwood and power, and most of these licenses are said to have found their way into Boston ownership.

The Province of Quebec, however, declined to admit the validity of these licenses, and whenever a licensee went in to cut wood and install the necessary plant, the Quebec authorities promptly stepped in and stopped the work. The licensees, therefore, waived the formality of their fees to Newfoundland. Since the Labrador coast has been decided to belong to Newfoundland, Quebec has no further rights in the territory and the Island Colony is administering matters in its own behalf.

Alfred E. Clark, president-elect of the newly-formed Canadian Forest Products Publicity Ass'n, recently announced that the association plans to spend during the next four years $2,500,000 on a Dominion-wide campaign for the purpose of research in the industry and to combat the inroads made by substitutes for materials which belong to the lumber industry.

R. A. Walton, of Liverpool, N. S., who is largely interested in the pulp and paper industry, recently stated on his return from Great Britain that there was plenty of opportunity for the export of Canadian pulp to that country and that the competition from Scandinavian countries was gradually decreasing.

Approve Sale of Newfoundland Mill to I. P. Co.

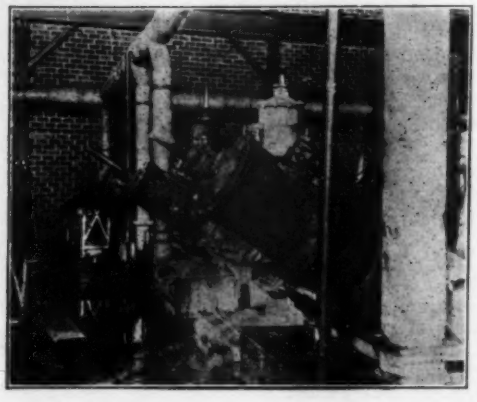
The debenture holders of the Newfoundland Power and Paper Co. have formally agreed to the sale of the concern to International Paper. Sir Wm. Plender, who presided at the meeting of the debenture holders, pointed out that the new company will operate in Newfoundland, not as an isolated firm, but as part of a powerful and experienced group which will have all the elements required to make the undertaking successful.

Sir Wm. Plender gave no indication as to what effect the sale would have on the Armstrong, Whitworth Co., which was

BAXTER Grinder Exhaust SYSTEM

With Exhaust Connection Closed

With Exhaust Connection Open



Clears the Fog From Grinder Room!

By operating the Baxter Exhaust System in conjunction with Briner Economizers the heat in this vapor from the grinders is reclaimed and utilized for the additional advantage of heating the air supply without the usual amount of extra steam.

Write Us For Complete Information Regarding Results Being Secured In Prominent Mills.

J. O. ROSS ENGINEERING CORPORATION

208 W. Washington Street
CHICAGO

Main Office
30 E. 42nd Street, NEW YORK

1117 Tacoma Ave.
TACOMA, WASH.

ROSS ENGINEERING OF CANADA, Limited
NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

deeply involved in the Newfoundland Power and Paper Co., one of its subsidiaries, and promoted the sale to International Paper.

The new company will assume the old company's obligations for principal and interest of 2,000,000 pounds "A" stock and 2,000,000 pounds "B" stock. The "A" stock will be repaid at par by 1948 in accordance with its existing terms, but repayment date of the "B" stock will be extended to 1970. The new company will have power to issue to a limit of 4,000,000 pounds first mortgage bonds ranking before the "A" and "B" stocks.

QUEBEC

Taschereau Opens Lake St. John Mill

At Dolbeau, on the Mistassini River, in the presence of several of his colleagues, of the federal and the provincial members of Lake St. John, of A. V. Davis, president of the Aluminum Co. of Canada, of directors and managers of the many companies which have made of the Saguenay and Lake St. John district a wonderful center of industrial activities, Hon. L. A. Taschereau, Prime Minister of Quebec, put into motion No. 1 machine of the Lake St. John Power and Paper Co.'s new mill on December 16. This machine is rated to turn out 110 tons of newsprint daily. Number 2 machine was started up a few days later, and the entire output of the mill, rated at 220 tons, has been sold for a period of ten years to the Hearst publishing interests of New York. According to John Stadler, general manager and designer of the mill, the layout has been made for an ultimate capacity of not less than 660 tons per day, which will require six machines.

This mill was begun in the spring of last year, after preparations had been made during the preceding winter. When the company began its operations there was no railway nearer than the Canadian National at St. Félicien, 26 miles away. Neither was there any more than an ordinary country road, mostly unimproved, and at times entirely impassable, covering this whole distance. There were no houses available in the vicinity, as it was practically unsettled country. The construction under these conditions presented many difficulties. Nevertheless the company was under agreement with the Government to build and complete the mill within a specified time, and was determined to fulfill its obligations. It has completed the mill in one-half the time agreed upon.

In addition to the construction of the mill, it became necessary to build an entirely new town to take care of the employees. As a result the company obtained a charter from the Legislature for the town of Dolbeau, which now has some 1200 inhabitants, of whom 90 per cent are French-Canadians, and which is being so rapidly built up by people from all parts of the Lake St. John district and elsewhere that it is expected it will be several times its present size within a year.

The company owns timber leases from the government covering 1,000 square miles of pulpwood lands on the Mistassini and Aux Rats Rivers adjoining the mill. This area contains 6,000,000 cords of pulpwood, and all of this wood can be floated down the rivers direct to the mill, making the pulpwood supply one of the cheapest possible to obtain. The company now has ample wood in storage at the mill to cover requirements until next summer.

500-Ton Mill Starts Up At Quebec

Quebec City's newest industry, the Anglo-Canadian Pulp and Paper Co.'s newsprint mill, began operations on December 12th under the guiding hand of Lord Rothermere, president of the company, and it is expected that in the course of 1928 production will reach 500 tons per day, employing 600 men in the mill itself and some 2,000 in the woods. The opening of the mill was attended by Lord Rothermere, Premier Taschereau and John Wostenholme, managing director of Chas. Walmsley & Co., Bury, England, which constructed the four paper machines for the new mill.

Construction of the mill was commenced in November 1926, following upon the acquisition of 2,260 square miles of limits in the Manicouagan River basin and of 350 square miles in the Montmorency district. The realization of the project is due to the enterprise of Frank W. Clarke, of the Clarke Steamship Co., who interested Lord Rothermere in the scheme and secured the timber leases, the condition of the leases being that the mill was to be constructed within eight miles of an existing city. The choice fell on the city of Quebec, and the mill site was chosen in Limoilou, where excellent facilities are provided for shipment of the paper, which is destined for Great Britain.

R. A. McInnis is general manager of the company, and is responsible for the supervision of plant construction and equipment installation. He was formerly general manager of the Abitibi Power and Paper Co., at Iroquois Falls, Ont., where he left an enviable record of achievement in the reduction of paper mill operating costs.

Foundation work on the mill was started in November 1926, and installation of the equipment in July of last year, so it is probable that all time records for the construction and equipment of a paper mill of similar capacity have been broken. Most modern machinery has been installed throughout, and $7,000,000 has already been expended on construction and equipment, of which $3,000,000 was spent for equipment in Great Britain.

The St. Lawrence Paper Mills, Ltd., Three Rivers, has authorized the immediate erection of the proposed addition to its pulpwood handling plant at Trinity Bay, for which a general contract has been let to the Foundation Co. of Canada, Montreal. The expansion program will provide several new units, with additional pulpwood-loading and other operating facilities, and is estimated to cost about $1,000,000 with machinery.

The Court of Appeals at Plattsburg, N. Y., has handed down a decision in favor of the Stock Exchange house of McDougall and Cowans, Montreal, against the Ticonderoga Pulp and Paper Co., for more than $350,000. Litigation in this case has been in progress since April 1921. It has been before the highest courts in Canada and the Privy Council and before the highest courts of New York State. It has, by reason of unusual and far-reaching questions of law, become quite a cause célèbre, having been extensively commented upon in various law journals and publications. Thomas B. Cotter, Plattsburg attorney for the Montreal firm, deserves credit for carrying the long-drawn-out case to a finally successful conclusion. The judgment was satisfied within two hours of the time of its filing with the county clerk.

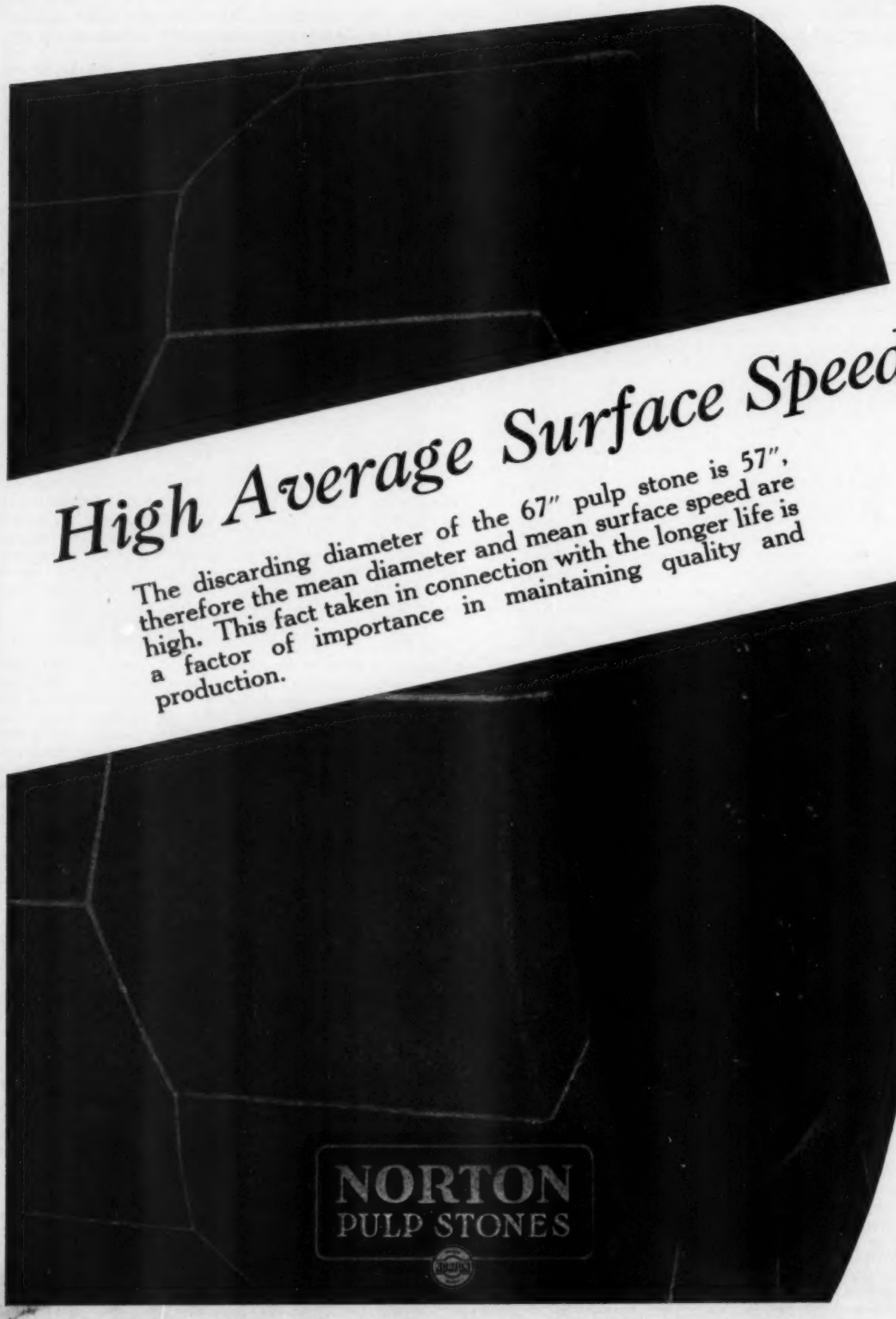
Canadians Acquire Control of Donnacona

Owners of two-thirds of all stock of the Donnacona Paper Co. have sent notice to the other stockholders that they have agreed to sell their holdings to Royal Securities Corp., of Montreal, for $100 per share for common and $110 per share plus dividend for preferred, payable January 10, on condition that the buyers also buy the remaining stock at the same price and on the same terms. The buyers have deposited $250,000 in guarantee to carry out the agreement January 2.

Following as it does the acquisition by Canadian interests of other American owned properties in Canada, including Provincial Paper Mills, the return to Canadian ownership of the Donnacona Paper Co. has been received with satisfaction in Canadian financial circles. Approximately $14,000,000 is understood to be involved in the transaction.

Water Transports, Ltd., an associated company of Keystone Transports, Ltd., is building three steamers with the Smith's Dock Co., England, for pulpwood trade between Anticosti Island, Port Alfred and Three-Rivers.

For the past year the Brompton Pulp and Paper Co.'s newsprint output has been taken by the Hearst publishing interests. Now that the St. John Power and Paper Co.'s new



High Average Surface Speed

The discarding diameter of the 67" pulp stone is 57", therefore the mean diameter and mean surface speed are high. This fact taken in connection with the longer life is a factor of importance in maintaining quality and production.

NORTON COMPANY, WORCESTER, MASS.. Norton Company of Canada, Ltd., Hamilton, Ontario

mill has been started up, it will send the whole of its output to the Hearst interests, and it is understood that the Brompton output will be disposed of through the Canadian News Print Co., which already handles the output of a large proportion of the Canadian mills, including the Abitibi-Spanish River group, the St. Maurice Valley Corp., Price Bros., Laurentide, and the new Anglo-Canadian mill.

The Quebec Pulp and Paper Mills have been taken over by the Port Alfred Pulp and Paper Corp. and Price Bros., and have been organized as the Quebec Pulp and Paper Corp. The head office of the company is located at Chicoutimi, and the officers are as follows: A. J. Brown, K. C., chairman of the board; A. S. McNichols, president; A. C. Price and C. E. Bergeron, vice-presidents; J. M. Carignan, secretary; G. E. Innes, treasurer, and F. G. Bush, assistant-secretary. As yet the new owners have formulated no plans regarding the future developments of the properties; but at present there is no intention of developing the mill into a newsprint producer owing to the present situation of the newsprint market.

It is proposed to take out about 175,000 cords of pulpwood on the Island of Anticosti this winter, as compared with 50,000 cords last winter. A pier 5,750 feet long has been constructed at Port Ménier, and a jetty completed during the present season, which provides a good slipway at the port. There are two huge towers, erected at a cost of some $300,000, which are each capable of lifting a cord and a quarter at a time, and dumping this pulpwood into steamers' holds.

Construction work is progressing so rapidly on the Paugan Falls hydro-electric development of the Gatineau Power Co. that it is expected the first generator will be in operation and delivering electric energy early this summer. The concrete dam across the river has been completed, the steel framework of the powerhouse is up, and the penstocks are now being installed. The work to date has involved excavating 350,000 cubic yards of earth and rock, the placing of 200,000 cubic yards of concrete in the dams and powerhouse, and the laying of 650,000 bricks. A sad accident happened last month when a heavy cable holding a boom snapped and precipitated five men on the boom into the swirling tail race of the power plant.

An offering has been made by a strong syndicate of Canadian investment houses of an issue of $12,500,000 of 6 per cent cumulative, first preferred stock of Canadian Hydro-Electric Corp. This company has been formed as a subsidiary of International Paper Co. to take over power holdings of the latter in Canada, comprising Gatineau Power Co., Gatineau Electric Light Co., and St. John River Power Co. The new company owns all the preferred and common shares of Gatineau Power, all the preferred and 85 per cent of the common shares of Gatineau Electric Light, and majority of the preferred and all the common shares of St. John River Power. On completion of present construction, the new company will be the second largest privately-owned power company in Canada. The company has been incorporated at Ottawa with an authorized capital of $37,500,000 6 per cent cumulative first preferred shares, $25,000,000 6 per cent non-cumulative preferred shares, and 1,000,000 no-par-value common shares.

Gatineau Power Denied Appeal

There can be no appeal from a decision of the Public Service Commission of Quebec in matters of expropriation, the Court of Appeals has decided, dismissing an appeal inscribed by the Gatineau Power Co. against a decision of the Commission, which refused the company the right to expropriate certain properties on a creek running into the Gatineau River, the property of Freeman T. Cross.

The Gatineau Power Co., which is developing power throughout the length of the Gatineau River, required the stream on which Cross operates his mill, from which he himself develops a certain quantity of electricity. The company also wanted some of the land on which buildings owned by Cross are located. On April 22nd last the Public Service Commission dismissed the company's application for permission to expropriate and the company appealed to the Court of King's Bench, Appeal Side. The appeal has now been dismissed with costs, and the record of the case ordered back to the Public Service Commission.

Price Bros. Buys Donnacona

It is reported that Col. John H. Price, president of Price Bros., is associated with the Royal Securities Corp. in the purchase of Donnacona Paper Co. While there is the possibility that eventually Donnacona might thus be included in the Price Bros. picture, yet the general impression prevailing among those with some knowledge of the deal is that the acquired company will still continue to operate as an independent unit.

Price Bros., however, has aligned itself with the large proportion of Canadian mills which sell their output through the Canadian Newsprint Co. It perhaps can be anticipated that for the future Donnacona's output will all be sold through the same agency. If this takes place, it will undoubtedly weave greater strength into the Canadian newsprint industry picture for the greater consolidation of sales effort by the companies naturally strengthens the whole industry.

Following an inspection of the Gatineau Power Co.'s plant, at present under construction at Paugan Falls, on the Gatineau River, A. R. Graustein, president of International Paper Co., recently announced indications were that power would be ready for delivery to the Ontario Hydro-Electric Power Commission earlier than contracted for.

Wayagamack Statement Shows Improvement

Wayagamack Pulp and Paper Co., Canada's largest producer of kraft paper, and also a producer of newsprint through its subsidiary, Wayagamack News, shows increased profits and improvement in its financial position in the annual statement covering the year ended November 30, 1927. Gross earnings amounted to $1,420,462, as compared with $1,350,266 the preceding year. After deducting $160,000 for depreciation, $135,320 for depletion of timber limits and $397,500 for bond interest, there remains a net income of $727,643, as against $655,982 the preceding year. Dividend requirements amounted to $375,000, leaving a surplus of $352,643, which, added to the previous surplus, brought total surplus up to $2,900,589. Net working capital at $3,145,109 shows an increase of nearly $200,000.

In his remarks to shareholders, President C. R. Whitehead stated that construction of a dock and wood-handling plant for the unloading of pulp wood from the Island of Anticosti is now in progress. This dock, when completed, will also provide facilities for the more economical handling of cargoes of chemicals and export shipments of pulp and paper. The expenditure for this work to date has been added to capital assets.

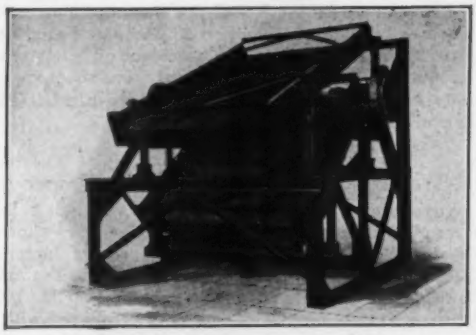
About forty landowners of the Lac Sainte-Marie region, on the Gatineau River above Paugan Falls, have refused the sums offered by the Gatineau Power Co. as compensation for lands which will be flooded when the dam at present under construction at Paugan will have been completed, claiming that in many cases the price offered represented only half the value of their property. The company has, therefore, entered expropriation proceedings in the Superior Court at Hull.

Eddy Co. Sells Match Department

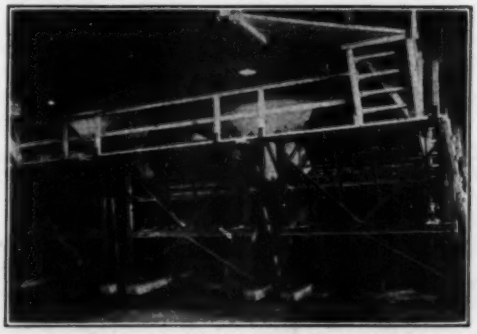
The match business of the E. B. Eddy Co., of Hull, of which Hon. R. B. Bennett, leader of the Conservative party, is controlling shareholder, is being taken over by a new company under the presidency of Geo. W. Paton, of London, Eng., chairman and managing director of Bryant and May, British match manufacturers. The Eddy Match Co., Ltd., was recently incorporated at Ottawa for the purpose of acquiring

RYTHER AND PRINGLE COMPANY
CARTHAGE N.Y.

RYTHER CHIP SCREEN

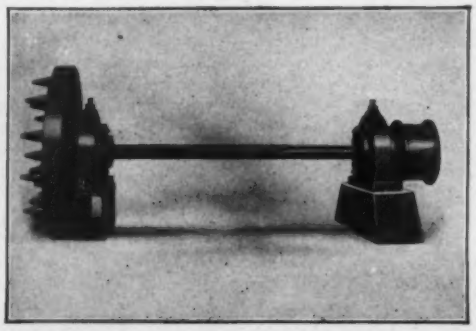


All steel construction
Floor space 10 feet square,
high capacity, 2 H. P. per unit.



Showing rear view of three
Ryther Chip Screens operating
in multiple, 25 cords per hour.

WOOD CHIP BREAKER



Chips treated by the Wood Ideal Chip Breaker installed under the chipper hood are uniform in size, thoroughly separated, dusted free and clean, ready for screening.

FOR CANADA REFER

CANADIAN INGERSOLL-RAND COMPANY, LIMITED
10 PHILLIPS SQUARE, MONTREAL, P. Q.

the match business of the E. B. Eddy Co., the Dominion Match Co. of Deseronto, Ont., the Canadian Match Co. of Pembroke, Ont., and the World Match Corporation of Berthierville, Que. It will make no public issue of securities.

As regards the pulp and paper end of the E. B. Eddy Co., president Millen recently stated that several interesting offers had been received, but that nothing had as yet been decided as to its final disposal.

Increased Profits for Canadian Paperboard

Earnings of the Canadian Paperboard Co. for the half year ended September 30th last, without including any revenue from its subsidiaries, amounted to $69,672, after payment of bond interest charges. After allowing for depreciation at the usual rate during the six months' period, the amount applicable to dividends was $49,672. The company's last fiscal year covered a period of only nine months, the date of the conclusion of the fiscal year having been changed from June 30 to March 31; but in this nine months' period the company earned $52,011 applicable to dividends.

The satisfactory position which it occupies may be judged from the fact that earnings during the last six months were practically as large as those of the preceding nine months, and compare most favorably with the net earnings for the full year 1925, which amounted to $37,672.

It is understood that the earnings of the Quinte and Trent Valley Power Co., Canadian Paperboard's power subsidiary, are improving steadily, and in addition construction is now proceeding on a new mill which the company is erecting at Toronto. This mill will have a daily output of 100 tons, equivalent to an annual production of about 25,000 tons.

Ellwood Wilson, chief forester of the Laurentide Co., has been re-elected chairman of the St. Maurice Valley Branch of the Engineering Institute of Canada.

ONTARIO

Provincial Paper Try New Woods System

The Provincial Paper Mills in their woods activities employ a shacker system for small blocks of timber. Under this system a party of ten men, or thereabouts, sign a contract to cut and haul the wood to the landing or railway, at so much a cord for the wood and at so much per 100 feet for cutting the roads. The company furnishes all the necessary equipment, for which the shackers are charged, and credit is given, less breakages, upon completion of the contract. Horses, fodder and sleighs are furnished by the company.

The shackers simply supply the labor, build their own camps, cut their roads and take out the wood. The division of their earnings is left to themselves, and the individual earnings of each man does not concern the company. The cutting is supervised and scaling is done by a representative of the company. This plan has worked out very satisfactorily in isolated blocks of timber where the haul is not too long.

Superior Paper Mills, of Thorold, are now running 24 hours a day, on the various lines of specialties turned out by them. The company reports that the prospects for the present year look exceptionally bright. The C. V. Syrett Paper Co., of Toronto, have taken over the direct mill agency for a number of the products of the Superior Paper Mills.

Province Checks Pulpwood Returns

The Department of Lands and Forests has discovered that a contractor working for a paper mill in the Niagara Peninsula has been making short returns on the amount of pulpwood taken out. One hundred per cent was added by the contractor, but the Department is not yet satisfied and claims that there is still more owing it. The method followed in putting over the transaction was the same old game of false

INSTALLATION AT MICHIGAN CARTON CO.
No. 14, class "D" LEWELLEN Transmission driving Black-Clawson cutter at the Michigan Carton Company. Machine speed—50 to 250 F.P.M. Sheet length—16½" to 82½" at any speed.

"....Operates Without Variation"

IN a recent letter from a user of a Lewellen Variable Speed Transmission he says: "Due to the sturdy construction of your drive it operates entirely without variation."

In this particular instance the Lewellen was installed on a cutter. But whether on cutters, winders, slitters, dryers, paper machines or anywhere else in a paper mill, this is true.

The Lewellen has been constructed to eliminate even the slightest variation. The design of the discs is such that when the transmission blocks enter the discs they do not and cannot change position. Both the tightening and shifting screws are provided with automatic locks so that when once they are set they stay that way.

The friction surface of the transmission belt is a special soft mineral tanned leather—the most reliable friction surface possible.

Another thing, the bearings on the Lewellen are always in perfect alignment, and the shaft always runs absolutely true. On the ball bearing type the thrust bearings are enclosed in oil-tight, dust-proof mountings.

The bearing mountings carry pivots exactly central with the ball bearing so that at all times the load is evenly distributed over all the balls in the bearing.

It is easy to understand from these features why the Lewellen Variable Speed Transmission is known to paper mill men as the drive that operates steadily, evenly, without variation.

May we send you the complete story of the Lewellen? Just a card will do.

LEWELLEN MFG. CO.
Columbus, Indiana

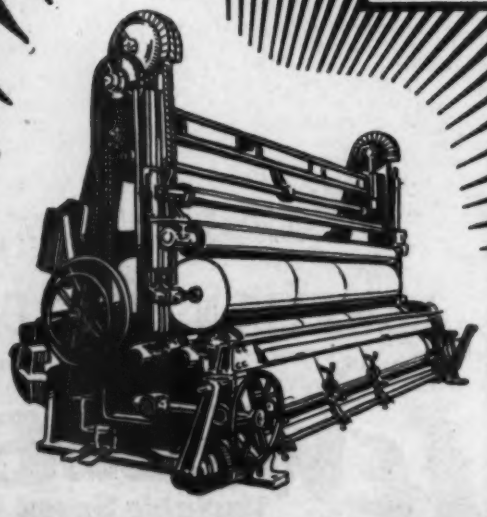
LEWELLEN
Variable Speed
TRANSMISSION

CAMACHINE

The importance of the roll-winding operation definitely fixes the status of the Roll-Winder as an important piece of equipment in paper and board mills. On the Roll-Winder depends whether due credit is done to all of the care and skill in bringing the web up to the reels. Good paper when wound into good rolls leaves nothing to regret, but the best of paper in poorly wound rolls serves to invite dissatisfaction.

Camachines Are Good Roll Winders.

CAMERON MACHINE COMPANY
61 Poplar Street, Brooklyn, New York, U. S. A.



-WN-

returns from officials who were persuaded to fail in their duty. The loss to the Government in this case is estimated at about $100,000.

The question as to whether the method of false returns in regard to one cutting of pulpwood is an isolated case or representative of a widespread system in regard to many cuttings has still to be answered.

George E. Challes, of Toronto, veteran representative of the Riordon Sales Corporation, Montreal, and Mrs. Challes are leaving on an extended trip through the south of Europe. This will be the first long holiday that Mr. Challes has taken in many years.

W. H. Sherriff and N. S. Hodge, of the Hodge-Sherriff Paper Co., have been spending the last couple of months in Canada on a visit to the Canadian offices of the firm, which is sales agent for the Wayagamack Pulp and Paper Co. Mr. Sherriff is returning shortly to London, Eng., where he will take charge of the London office, while Mr. Hodge, who for the last few years has been manager of the London quarters of the organization, will remain in Toronto.

H. G. Wales, formerly chemist with the Service Division of Abitibi at Iroquois Falls, has gone to take up his new duties as chief chemist of the Brompton Pulp and Paper Co.

Local 109 of the International Brotherhood of Paper Makers, at Iroquois Falls, was recently visited by the president of the Brotherhood, W. R. Smith. A very enthusiastic meeting was held extending the president a warm welcome.

The Strathcona Paper Co., of Strathcona, manufacturer of sheathing paper and board, is installing a power plant to make its own electric energy. It has already erected a new boiler room, 75 by 33 feet and 30 feet high, and also a building 20 by 30 feet for a generator room. The power plant will have a 385-pound pressure boiler, made by Babcock-Wilcox and Goldie-McCullough, Ltd., of Galt, and a steam turbine connected to the generator so that the exhaust steam will be utilized on the paper machine for drying the paper, as well as in the heater room.

Abitibi Merger in Sound Position

The Abitibi-Spanish River merger establishes another record besides the creation of the largest newsprint unit among Canadian mills. The new corporation will possess total assets that will exceed those of any other industrial company incorporated in and operating exclusively in Canada. The total assets are over $178,000,000, of which the estimated value of the property and plants and timber reserves is over $150,000,000. Up to the present the British Empire Steel Corp. held this premier position, with assets of $160,000,000 and fixed assets, property, etc., of about $135,000,000. Just how large this total of $178,000,000 of assets for one organization bulks in comparison is indicated by the fact that the capital invested in the entire Canadian textile industry, woolen as well as cotton, according to the latest returns of the Dominion Bureau of Statistics, is about $105,000,000, and the similar total for the entire flour milling industry is in the neighborhood of $65,000,000.

Undoubtedly one of the most valuable assets of the new organization is its timber wealth, which aggregates over 30,000 square miles of leased and free-hold timber lands, and which establishes the company as the largest individual pulpwood holders of any pulp and paper organization in the world. With the steady depletion of the timber limits in the United States, these and other high grade pulpwood limits in Canada should steadily increase in value in years to come.

As regards power, the company owns power plants at Island Falls, Iroquois Falls and Twin Falls, with an aggregate installed capacity of 115,000 h.p., and it also owns rights to undeveloped power site with an estimated capacity of some 250,000 h.p. along the Abitibi River. The former Spanish River

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Cost Less
because
They Live Longer

Figure the utilization cost of your paper rolls! Compare the yardage run or number of operating hours of service to their initial cost!

Waldron Paper Rolls are built to stand up in service—better and longer. For this reason they prove the most inexpensive to buy. You can prove this for yourself!

Have you an instruction sheet on HOW A PAPER ROLL SHOULD BE RUN IN? We will gladly send you one on request.

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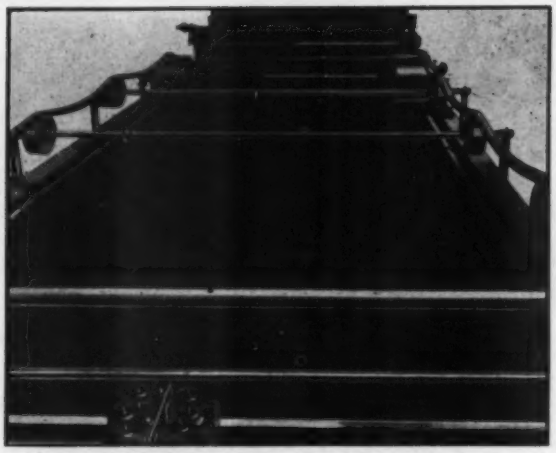


14,400 Revolutions per 24 hours!

A 100-foot Fourdrinier Wire, traveling at the rate of 1,000 feet per minute, makes 14,400 complete revolutions per 24-hour day.

14,400 times past each suction box—past each table roll—over the breast roll—through the couch rolls.

14,400 times receiving a heavy load of stock, containing over 95 per cent water which must drain through the wire.

The utmost strength and durability is required—none but the toughest wire, woven with the greatest care, can stand up under such severe service.

Tyler Fourdrinier Wires have been improved to resist the increased punishment of ever faster production. More than fifty years of wire-weaving experience is behind every wire.

Tyler Fourdrinier Wires are the most durable, the most accurate and the most dependable of all Fourdrinier Wires. They run straight and true. They remove the water uniformly. They produce paper free from defect. They keep production more continuous and more profitable.

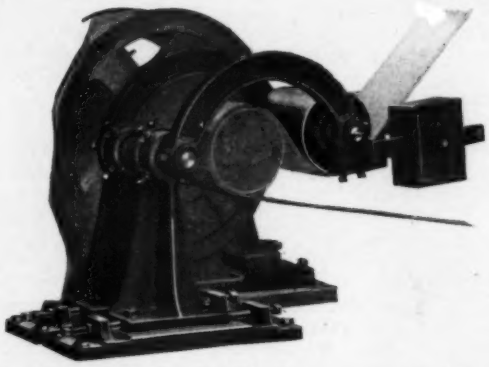
Try Tyler Fourdrinier Wires on your machines.

Supplied in all widths up to and including 250 inches

The W. S. TYLER COMPANY, *Cleveland, O.*

Backing Wire Tyler Fourdrinier Wire Corduroy Cloth

TYLER WIRES



Harness the Full Power of Your Motor Drive With the U. G. Automatic Belt Contactor.

SAVE—
BELTS
BEARINGS
FLOOR SPACE
POWER AND UPKEEP

It assures maximum tractive effort in minimum space. The motive power can be harnessed to its load in much less space than for an open belt drive and the arc of contact greatly increased, giving more driving power. The belt cannot slip and there is less wear on belt and less strain on bearings.

Why not investigate the economical advantages of the U. G. Automatic Belt Contactor. Our engineers will be glad to cooperate. There will be no obligation.

THE T. B. WOOD SONS CO. LINE

includes Shafting, Hangers, Couplings, Flexible Couplings, Rope Drives, Friction Clutches, Pulleys, Pillow Blocks, Belt Contactors, Speed Reducers, Conveyors and Ball Bearing Equipped Units.

T. B. Wood's Sons Co.

Chambersburg, Pa.

Southern Office: No. 312 Masonic Temple, Greenville, S. C.
New England Branch and Warehouse:
624 Main St., Cambridge, Mass.

mills at Sault Ste. Marie, Sturgeon Falls and Espanola each has a water power development, the total amount generated at the three mills being over 25,000 h.p. The four other mills are situated so that they can readily obtain an adequate supply of power from public utilities companies.

An analysis of the earnings of the Spanish River and Abitibi companies for the last six years shows a total profit of $24,227,741 available for common stock dividends, while on a basis of $4 per share for double the present Abitibi stock and Spanish River stock dividends would have required $16,534,560. Such would have been the results from actual operations when the companies were separate, and with no allowance for the many advantages in earning power and efficiency that will accrue from bringing these two and the others under one control. It would appear, therefore, that in indicating a dividend of $4 on the new stock, the past performances of the chief units in the merger provided an adequate and even generous basis.

Wm. Ellis, who took charge of the old Mattagami mill at Smooth Rocks Falls about four years ago remained in charge when the plant was taken over by the Abitibi Fibre Co., has resigned his position. When Mr. Ellis took over the managership, the mill was in the hands of the receiver and not paying for itself. He built up and installed a bleaching plant, and now the production is greater than the rated capacity. H. C. Atkinson, who has been with the company for some ten years, in different capacities, and latterly as superintendent under Mr. Ellis, has been appointed to succeed him.

According to figures recently supplied by Hon. William Finlayson, there has been an enormous decrease in the forest areas of Ontario consumed by fire. It is expected that this year's fire loss will only total about 30,000 acres. In 1923, when the fire loss totalled 2,120,000 acres, there were 1,300 fires. In 1926, when the fire loss totalled 80,000 acres, there were 1,200 fires. The inference is that the great decrease in the area is due not so much to the starting of fewer fires as to the effective steps taken by the Forestry Service, particularly by the aviation branch, in putting them out.

The Hodge-Sherriff Paper Company, of Toronto and Montreal, is now operating under a Dominion charter as the Hodge-Sherriff Paper Co., Ltd.

The Interlake Tissue Mills has presented E. C. Martin, formerly its sales and advertising manager, with a handsome grandfather's clock, as a mark of its appreciation of his services during the more than six years that he was with the company.

Mr. McElhaney, of the Canadian Forestry Branch, has been transferred from Vancouver to Ottawa as superintendent of the Forest Products Laboratories, succeeding W. Kynoch, who resigned last summer to accept a position with the Forestry Department of Michigan university.

Work is being pushed as rapidly as possible on the paper mill at present under construction at Fort William by the Great Lakes Paper Co. The company started operating a groundwood mill with a capacity of 165 tons per day in June 1924. The newsprint mill now being erected will be operated in connection with the groundwood mill, and is designed to have an ultimate capacity of 550 tons a day.

Rapid progress is being made on the construction of the big newsprint mill of the Spruce Falls Power and Paper Co. at Kapuskasing. Construction of the hydro-electric power plant at Smoky Falls is completed and machinery is being installed which will be in operation during the month of March. The mill buildings are all completed and cover approximately seven and a half acres. No. 1 and No. 2 newsprint machines, built by Dominion Engineering Works, are at present being erected; No. 1 will go into operation early in

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GUARANTEES TO REPAIR OR REPLACE FREE OF CHARGE FOR ONE YEAR FROM DATE OF SHIPMENT, ANY INSTRUMENT THAT DOES NOT PROVE PERMANENT IN CALIBRATION AND FREE FROM DEFECTS IN WORKMANSHIP AND MATERIAL
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FOXBORO

Like the Sterling mark on silver, the Sealed Guarantee on a Foxboro Instrument stands for KNOWN QUALITY.... *a hallmark of excellence*

The SEALED GUARANTEE

ON WHICH IS STAMPED YOUR PROTECTION AND OUR REPUTATION

THE FOXBORO CO., INC., announces a guarantee of materials, workmanship and permanency of calibration to be sealed to each Foxboro instrument.

Far-sighted manufacturers will appreciate at once the significance of this announcement. It means that, for the first time, a standard has been established for measuring the accuracy and reliability of an instrument which records or controls temperature, pressure, humidity or flow.

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Only the finest instruments could be backed by such a guarantee ..... so specific in purpose, so broad in protection. Does your business deserve less?

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THE COMPASS OF INDUSTRY

INSTRUMENTS FOR INDICATING, RECORDING AND CONTROLLING TEMPERATURE, PRESSURE, HUMIDITY AND FLOW

TWENTY "PAPER" OLIVERS ordered in thirty days

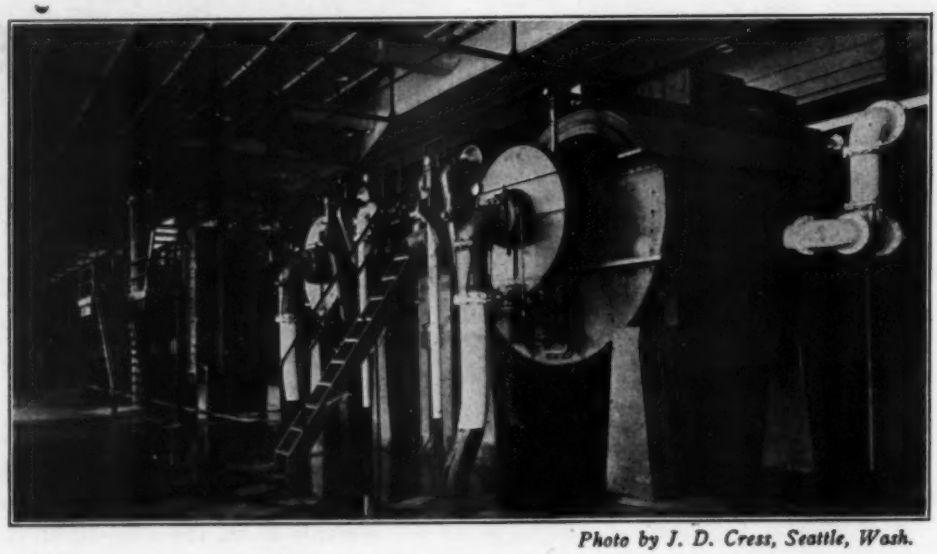

Photo by J. D. Cress, Seattle, Wash.

Oliver Save-Alls

November orders for "Paper" Olivers were the direct result of satisfactory economical operation in mills where Olivers are already installed.

Twelve were repeat orders from Paper Companies already using Olivers.

"Oliver Service" which goes with Oliver Sales helped to produce the satisfactory operation.

Thickeners, Washers, Deckers, Save-Alls.

See page 378 in the 1927 Paper and Pulp Mill Catalogue.

Oliver Continuous Filter Co.

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802 Cunard Building
Oakland, Calif.
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E. L. Bateman, Locarno House

London
11 Southampton Row
Honolulu, T. H.
W. A. Ramsay, Ltd.

May and No. 2 soon afterwards. Installation of two other machines will be started just as soon as the first two are in operation. The power plant consists of steam boilers of an approximate capacity of 20,000 h.p., fired with pulverized fuel, and two electric steam generators of 20,000 kilowatts. The power plant and equipment has been handled by the Canadian Power Specialty Co.

A rossing plant has been added to the equipment of the Detroit Sulphite Pulp and Paper Co., which for the past eight years has been in operation with yards at West Fort William and offices in Port Arthur. Walter Laubengayer is the representative of the company. Between 20,000 and 40,000 cords per season are handled at the plant.

I. P. Co. Secures Option on Timber Lands

A. R. Graustein and his associates of the International Paper Co. have secured an option on pulp lands held by MacDougall and Hepburn, operating the Allanwater mills in northwest Ontario. The option on the tract, above Sioux Lookout, does not expire until February 1st.

So far as is known, no power is included. Sioux Lookout power to be developed on the English River would be available for the operation of these limits. For that reason, it is suggested that Mr. Graustein may be personally interested in the present surveys being made by the Ontario Government for a reserve dam on the English River.

Some months ago the Ontario Government, through the Department of Lands and Forests, made a grant of the pulpwood lands to MacDougall and Hepburn, who were operating the Allanwater mills and limits.

NEW BRUNSWICK

Fraser to Redeem Preferred Stock

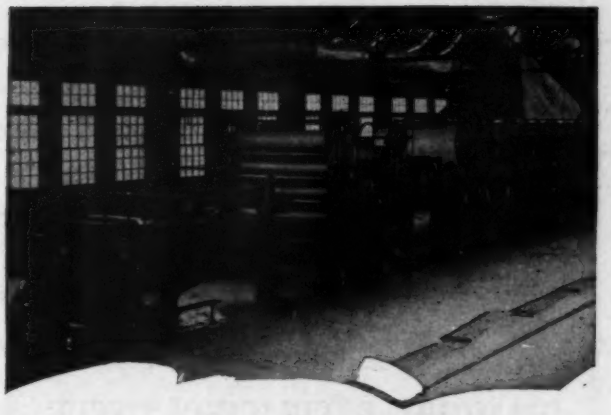
Fraser Companies, Ltd., have notified the preferred stockholders that the outstanding $2,325,000 of 7 per cent cumulative redeemable convertible preferred stock will be redeemed on January 30, at 105 and accrued interest. In the redemption notice attention of holders of the preferred is directed to the right which they have to convert their stock into common shares on the basis of three no par value shares for each preferred share held, and holders have the right to exercise this privilege before January 30.

It is understood that the directors propose to establish the common on a dividend basis of $1 per share per annum for 1928, and that the company's earnings are running substantially in excess of this figure. Present earnings do not reflect any benefit to be derived from the large expansion program now under way at Edmundston and Madawaska, which will approximately double the present output of finished high grade sulphite pulp and paper.

The extension of the Madawaska mill is proceeding rapidly. The first machine is now completely installed. Four large wood stave stock pipe lines are being laid from the Edmundston mill to the Madawaska mill, a distance of practically one mile, this method of handling the stock between the two mills having proved highly satisfactory.

Bathurst Sold to Montreal Firm

Some time ago it was stated that Holt Gundy and Co., of Montreal, had entered into negotiations with the Bathurst Co. to acquire the assets of the company at $80 per share for the 101,840 shares outstanding. The offer was understood to be satisfactory to a number of the larger individual shareholders; but before the deal was consummated two other offers were received, one from Nesbitt Thomson and Co. at 101 and the other from International Paper at 105. The offer of Nesbitt Thomson was finally accepted, and a few days ago Angus McLean, president of Bathurst, announced that he had completed the sale of his company for about $10,500,000



Ever have a problem like this?

DO YOU ever encounter trouble cleaning felts? Sometimes find it next to impossible to remove badly caked-on sizing or stubborn oil or grease deposits? Then you can profit by the experience of one paper mill superintendent who also had such a problem.

Here the difficulty was in removing spots of mineral oil. After two different soaps had proved unequal to the task, the advice of an Oakite Service Man was sought. His suggestions for cleaning with Oakite were followed with the result that all oil spots were completely removed. Oakite left the felts *thoroughly clean,* soft and porous—so that now, with washing done regularly the Oakite way, they *stay clean longer.*

For a similar satisfactory solution to any cleaning problem that may confront you, call in the Oakite Service Man. A card brings him. No obligation.

Oakite is manufactured only by

OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N. Y.

Oakite Service Men, cleaning specialists, are located at

Albany, N. Y., Allentown, Pa., Altoona, Pa., *Atlanta, Baltimore, *Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, Buffalo, *Camden, N. J., Charlotte, N. C., Chattanooga Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, O., Decatur, Ill., *Denver, *Des Moines, *Detroit, Erie, Pa., Flint, Mich., Fresno, Cal., *Grand Rapids, Mich., Greenville, S. C., Harrisburg, Pa., Hartford, *Houston, Tex., *Indianapolis, *Jacksonville, Fla., *Kansas City, *Los Angeles, Louisville, Ky., *Memphis, Tenn., *Milwaukee, *Minneapolis, *Moline, Ill., *Montreal, Newark, N. J., Newburgh, N. Y., New Haven, *New York, *Oakland, Cal., *Omaha, Neb., *Philadelphia, *Pittsburgh, Portland, Me., *Portland, Ore., Providence, Reading, Pa., *Rochester, N. Y. Rockford, Ill., *Rock Island, *San Francisco, *Seattle, *St. Louis, *St. Paul, South Bend, Ind., Syracuse, N. Y., *Toledo, *Toronto, Trenton, *Tulsa, Okla., Utica, N. Y., *Vancouver, B. C., Williamsport, Pa., Worcester, Mass.

*Stocks of Oakite materials are carried in these cities.

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

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B

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DIAMOND B SPLICING TISSUE

HIGHEST QUALITY

SPECIALLY MADE FOR THE PAPER TRADE
PRICES ON APPLICATION

BEMIS ASSOCIATES INC.

WATERTOWN, MASS.

MC

Through years of close contact with Paper Mills and incessant research the Merrimac Chemical Company has become a

SPECIALIST

in the manufacture of

PAPERMAKERS' ALUM

Alum from Merrimac Plants has gone out to the Paper Mills of the United States and Canada steadily for 41 years

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BOSTON

GRANT GEAR WORKS

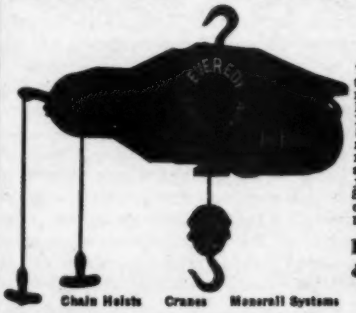
Estimates and gear advice promptly and cheerfully given

Send for Our Catalog of Stock Gears

Office and Works
Second & B Sts., Boston, Mass.

500 lb. Electric Hoist

$225.00



This Everedy Hoist is the most accessible hoist made. Light—500 lb. hoist weighs 225 lbs.; 1000 lb. hoist 250 lbs. Speedy — 40 feet per minute A. C., 25 feet per minute D. C. Limit stop at top and bottom adjustable to any point. Suspended wherever chain or air hoist is placed.

READING CHAIN & BLOCK CORP.
READING, PA.

BOLTON QUALITY

JOHN W. BOLTON & SONS, INC.
LAWRENCE, MASS.

The only firm making KNIVES for every machine from wood pile to finishing room.

It's the KNIVES that do the work!

A. J. Nesbitt and P. A. Thomson, accompanied by Ernest Rossiter, vice-president and general manager of St. Lawrence Paper Mills, and J. B. Woodyatt, president of Southern Canada Power Co. and director of other Nesbitt-Thomson enterprises, paid a visit to their recently-acquired properties. While none of these gentlemen cared to discuss future plans, indications are that important developments in the not distant future are likely to be the outcome of the deal recently concluded.

The company has not shown a very high earning power in the last few years, no dividend having been paid on the common since 1921; but it is very rich in timber resources, owning, together with its subsidiary, the Cascapedia Manufacturing and Trading Co., over 2,500 square miles of timber limits in Quebec and New Brunswick, estimated to contain 20,000,000 cords of pulpwood and 2,000,000,000 feet of saw timber. The bidding for the properties very plainly indicates the high importance attached by the leaders of the industry to abundant wood supplies.

NOVA SCOTIA

The Minas Basin Pulp Co. has definitely selected Hantsport as the site of this firm's new pulp mill, and the work on the excavation and foundation of the mill is under way. It is expected that the superstructure will be completed and the equipment all installed by August 1st of the present year. About 25 tons will be produced daily at the outset, and indications are that the production will be subsequently increased.

NEW ENGLAND NEWS

Prospects for 1928

Many important developments are expected in 1928 in the New England paper industry. Several of the larger manufacturers anticipate launching important construction programs at an early date, while there are several possible mergers and purchases that will create widespread interest.

With the manifest proclivity of the International Paper Co. to expand, it is not surprising to hear mention of various mill properties in which it is said to be interested. Some of these rumors prove to be without any foundation, and, as a matter of fact, outside of its large stock ownership in the New England Power Corp., it has done little to expand its New England properties. The tendency has been the other way. Mills at Bellows Falls and Wilder, Vt. have been closed, and it is said that two other small New England mills will eventually be utilized for power rights rather than the output of paper machines. But during the past month a report has come to hand of a New England mill which the International Paper would like to buy, a property which if sold would doubtless be the largest transaction of its kind in the history of the American paper trade.

Meantime, the year starts for Bird & Son, Inc., of East Walpole, Mass., with a larger directorate, and one of the best business outlooks of any New England paper company. Philip R. Allen, who succeeds the late Charles Sumner Bird, has been with Bird since 1898, George R. Wyman and Elmer H. Bartlett are likewise men of long service; the former in charge of manufacturing, and the latter of the company's special papers. Herbert H. Miller continues as treasurer. Mr. Allen is president of Building Products, Ltd., of Canada, with which Bird & Son, Inc., is affiliated, and is a director of the Federal Reserve Bank of Boston. Besides the foregoing, the directors include Charles Sumner Bird, Jr., representative of the Bird family interests which still control the common stock.

An interesting echo of the November flood in the Connecticut Valley was the donation of a substantial check to the Boy Scout Movement of Holyoke by the American Writing Paper

WOOD TANKS

Stave Pipe
Acid Towers
Blow Pits
Agitator Tanks
Special Tanks

We are equipped to build any kind of a wood tank. Specializing in Cypress and Redwood, we also make a great many tanks of Western Fir, Cedar, Eastern White Pine, Oak, Long Leaf Yellow Pine and other woods. These tanks are manufactured in our own modern Tank factory by experienced tank men.

We build box tanks in a large number of sizes ranging in capacity from 25 gallons to 30,000 gallons and round tanks in a great variety of diameters and heights ranging in capacity from 25 gallons to upwards of 125,000 gallons.

Our engineering department will assist and advise you concerning any type of wood tank. We will supervise any part or all of the construction work or furnish skilled crews to execute it.

Built of the right kind of wood for the specific use it is to be put to, a Stearns Wood Tank is a Long Life Tank.

Send for our Catalog A.

THE A. T. STEARNS LUMBER COMPANY

Neponset, Boston, Mass.

Norwich, Conn.,
Feb. 18, 1927.

STEPHENSON MFG. CO.,
Albany, N. Y.

Gentlemen:

You may be interested to know that we have sold ***Stephenson Bar Belt Dressing*** for some twenty-five years and have had the greatest success with it. In all that time we have not had a complaint and have sold the same concerns OVER AND OVER AGAIN. In recent years we have noticed a nice increase in the sale of this dressing and we always feel that we are working on very safe grounds in recommending it to any user.

Yours very truly,
THE NORWICH BELT MFG. CO., INC.

WORLD WIDE DISTRIBUTION

For Prices and Samples write to your Jobber or

STEPHENSON MFG. CO.
ALBANY, N. Y.

DUROFLEX
TRADE MARK
and
WICCAPEE
TRADE MARK
BELTINGS
For Jordans, Cone Drives, Beaters

Pulp Screen Diaphragms
Steam, Water, and Air Hose

Rubber Hose Nozzles to Order

NEW YORK RUBBER CORP.
Established 1851
BEACON, N. Y.
New York Office — 25 West 43rd Street

NO FELT MARKS—
With Fitchburg Felts

THE smooth, tightly-woven surface of all Fitchburg Cotton Dryer Felts insures paper free from felt marks.

¶ The finest papers—bonds, ledgers, fine writing—are made better and smoother when Fitchburg Felts are used.

¶ Manufactured in English weave, two, three, four, five and six ply, from 60 to 210 inches in width.

FITCHBURG DUCK MILLS
ESTABLISHED 1844
54 Duck Mill Road FITCHBURG, MASS.

1864 1927

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

Sold by
BULKLEY, DUNTON & COMPANY
75-77 Duane Street, N. Y.
and direct

Co. During the worst period of the flood several scouts stood guard during the night, filled sand bags and placed them against the temporary supports at the Norman division, while regular workers were busy elsewhere.

Eastern's Weighing Device

The Eastern Mfg. Co.'s weighing device for any material passing from a machine in a continuous web is attracting wider attention continuously. The New England Council, an association of New England industries which is actively investigating business conditions in these states, offering its advice to newcomers and old established firms undertaking market research and manufacturing problems, speaks highly of the Eastern device.

The weigher was developed by a laboratory worker of the Eastern Mfg. Co. at South Brewer, Me., and though made primarily and originally for paper, has a scope of usefulness in a far wider field. It is based on the principles of a radio receiving set. The web of material, paper, rubber, felt, etc., passes between two parallel metal plates which act as a condenser in the receiving circuit. Variations in the weight of the web change the capacity of the condenser and affect the response of the circuit to a wave of controlled frequency. These variations are shown on a meter connected in the circuit and may be used to operate machine controls by suitable relays. The machine is of great service in maintaining uniformity in the weighing of paper and an adaptation of the device may be used to register the moisture content of the paper. We understand that the Eastern leases the patented appliance at a regular fee to any concern which may have use for it.

Whiting Paper Co. Development

The treasurer of the Lyman Mills, the Holyoke textile property purchased by the Whiting Paper Co., in his report to stockholders states that the property was sold to Whiting for $500,000 cash which included machinery and all real estate power rights and tenements. He also announced that the Lyman Mills will continue to operate the property until present orders are finished, and one of the storehouses until October or November.

It is quite generally understood in Holyoke that the Whiting Co. plans a most ambitious program of expansion with the installation of many new paper machines, beaters and subsidiary equipment, orders for several of which are said to have been placed. The Company is silent on its plans as regards the New York converting establishment and has made no definite announcement regarding the actual installations in its newly acquired property.

Government Contract

Collins Mfg. Co., along with the American Writing Paper Co., will share in the business for the Government paper money, though it is reported that the order given Collins amounted to but 100 tons and that the American received but 200 or 250 tons. The preliminary production of $1 bills of the new size involves an especially heavy tonnage, and Crane's government mill operating at capacity could not, it is believed, complete the order in time.

In the fine paper trade, the understanding seems to be quite general that the Cranes still have all the government money paper business they can take care of and that the government believes a larger tonnage not only necessitates going outside of the Dalton manufacturers, but also that by utilizing several mills, a tonnage of paper can be built up and allowed to season which should greatly lengthen its life. Both the North Wilbraham and Holyoke manufacturers who succeeded in getting some of the business have made paper of exceptionally high quality which has stood every test. In fact it was on quality alone that A. W. P. C. secured a portion of the contract, their price being outside.

Great Northern Paper Co., and the New England Paper & Pulp Traffic Ass'n are engaged in a last ditch fight to prevent the Watertown group from depriving New England

Frederick

Centrifugal

• Pumps •

Single-Suction Standard Paper Mill Stock Pump

Certain products are of such admitted and outstanding excellence that they become the standard of comparison by which the best of their kind is judged. It is so with Frederick Stock Pumps for paper mills. Frederick Pumps were the first modern type stock pumps ever built for paper-mill service. They revolutionized the standards of efficiency in handling paper pulp. The favor with which they are regarded today by paper mills, large and small, throughout the world is rather convincing evidence that they still hold their leadership in this field.

The Frederick Standard Stock Pump efficiently handles stocks of up to 4% consistency. The Frederick Super-Stock Pump efficiently handles stocks of consistencies up to 6%.

The Frederick Iron & Steel Company

Frederick, Maryland

Offices in Principal Cities

Dependable Wire Clothing

Every possible precaution is taken to make sure that Cheney Bigelow Wire Clothing shall be dependable.

Only the highest grade materials are used. The wire is drawn with precision and very carefully annealed, it is frequently tested for quality and size.

The weaving is extremely accurate, the finished cloth is uniform and firm, and always inspected with minutest care before shipment.

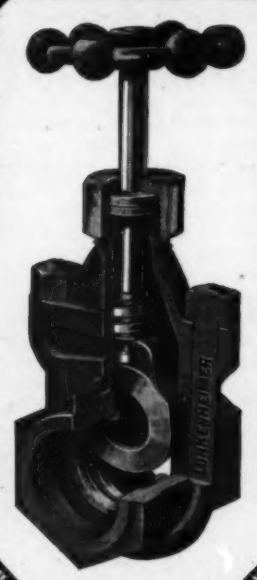
For Fourdrinier or Cylinder machines Cheney Bigelow Wire Clothing is always dependable.

Cheney Bigelow Wire Works

Established 1842

Springfield, Mass.

FOR STEAM, OIL OR WATER SERVICE



LUNKENHEIMER "CLIP" GATE VALVES

100 lb. W. S. P.

The steel clip surrounding the body rigidly secures the bonnet, lends strength to the body, and facilitates quick disassembling for inspection and cleaning.

The disc is double seated, and is tapered to a narrow point, making the valve particularly adaptable for handling heavily impregnated fluids.

"Clip" Valves are also procurable with lever for Quick Operating purposes, and in the All-Iron Pattern for handling solutions which attack bronze but not iron.

Lunkenheimer Distributors, located in all industrial centers, carry complete stocks and will fill your requirements promptly.

The complete line of Lunkenheimer "Clip" Valves are illustrated and described in Booklet F-505. A copy will be sent upon request without obligation.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO BOSTON PITTSBURGH
SAN FRANCISCO NEW ORLEANS
LONDON
EXPORT DEPT 129-139 LAFAYETTE ST., NEW YORK

5-32-67

of its present advantageous rates to Chicago and C. F. A. territory generally. Newsprint is now 36c to that market via the Canadian differential lines from New England and printing and wrapping paper have only slight rate handicaps which are no handicaps at all considering the difference in mileage. The argument to be used is the history of these rates: that it was New England's large tonnage originally that enabled the New York State mills to secure advantage of the New England rates by pleading fourth section violation. Moreover, it will be pleaded that New England was first in the field, built up its tonnage based on competitive rates and cannot now be robbed of that advantage.

The sale of the American Writing Paper Co., mill at South Lee to the Hurlburt Paper Co., was formally confirmed by transfer of the deeds to the property last month. The latter company has been incorporated in this state.

Garret Schenck

Garret Schenck, president of the Great Northern Paper Company, operating mills at Millinocket, East Millinocket and Madison, Me., died on Wednesday, January 4, at his home in Weston, a suburb of Boston, Mass., after a month's illness.

Mr. Schenck was born in Trenton, N. J., March 13, 1854, and was thus in the seventy-fourth year of his age at the time of his death. He had been a papermaker all his life having got his early start as a boy at the plant of Francis W. Bird, of Walpole, Mass. After remaining there for a few years, he was connected for a time with the Rumford Falls Paper Company and later engaged in the paper stock business on his own account under the firm name of Dutton & Schenck. The mills which he then established were located at Great Works, Orono and Rumford Falls, Me.

Mr. Schenck organized the Great Northern Paper Company, of which he was the president from its inception. He always retained a legal residence in Maine. At the time of his death this was at Millinocket where the principal plant of the company is located.

Mr. Schenck was the last of the directors of the International Paper Company, who formed an interesting group at the beginning of this great corporation. He was of an inventive turn of mind and introduced several improvements in the cooking of sulphite pulp, of which he was one of the pioneer users.

William Foley

William Foley, for 27 years superintendent of the Nekonegan Paper Co. at Old Town, Me., died last month at his home. Mr. Foley was born in St. Catherines, Ontario, and served with the Riordan Co., Dupont Co., Clark Co., Hollingsworth & Whitney Co., and for some years traveled as an expert on ground wood problems for the International Paper Co. He was considered to have mastered every detail connected with the manufacture of ground wood pulp to a greater degree than any other contemporary, and his advice and knowledge was sought by many companies.

He is survived by his widow, a son and daughter.

Duncan L. McCorkindale

Duncan L. McCorkindale, assistant superintendent of the Parsons Paper Co. of Holyoke for 28 years, recently passed away, at the age of 73 years. He was born in Scotland and came to this country in 1870.

Mr. McCorkindale was superintendent of several paper mills before going with Parsons, including the first mill at Wilder, Vt. He is survived by his widow and two sons.

A report from Holyoke states that the Norwood Engineering Co., has secured a contract for construction of a new filtering plant for the American Writing Paper Co.

National Blank Book Co., of Holyoke, one of the largest paper converters in New England has incorporated under

RYERSON

Immediate Shipment from Stock

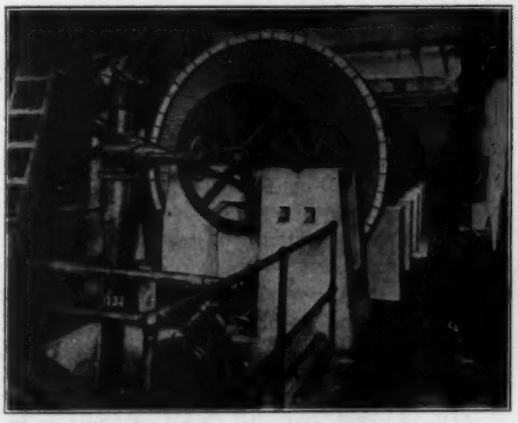
Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee Buffalo St. Louis New York Cincinnati Boston Detroit

STEEL

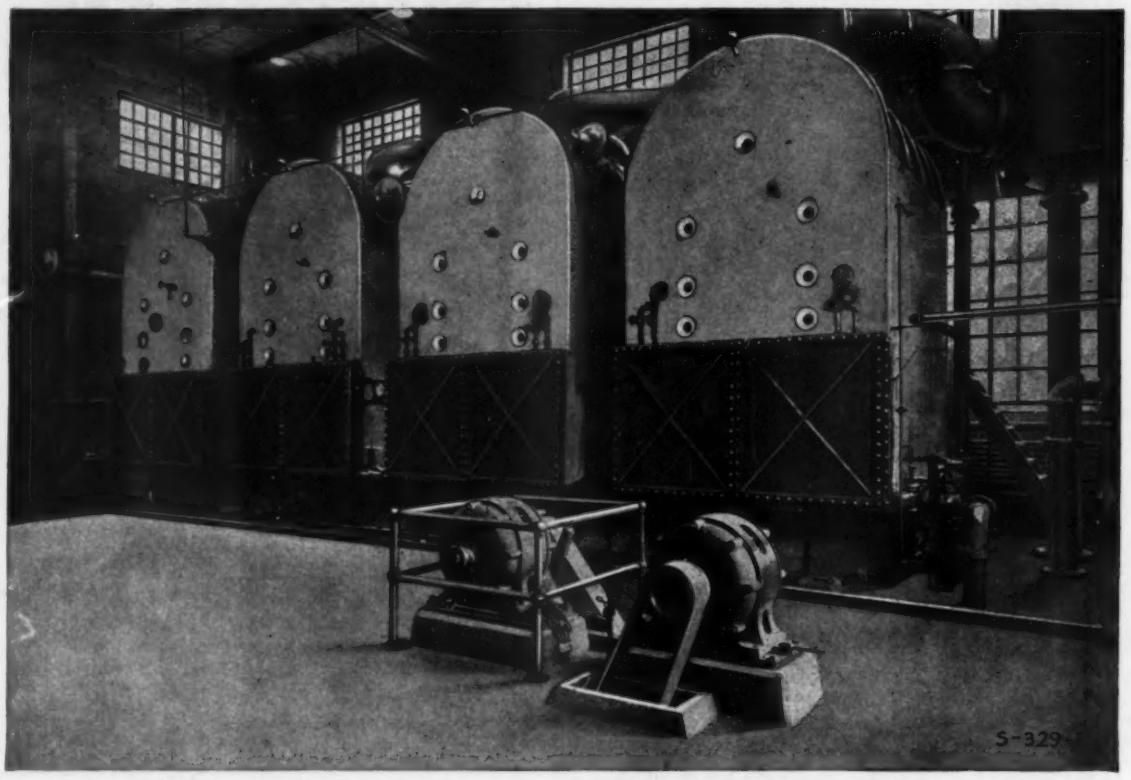


Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO



Quadruple Effect Evaporator for handling black liquor in a large Canadian mill

Successful Black Liquor Recovery Equipment

Intimate knowledge of pulp mill requirements is the basis of Swenson's success in this important field. This knowledge, the result of many years of hard work and careful research, enables our engineers to approach your problem in that direct, practical manner which means satisfaction. Add to this a complete modern plant, unusual experimental facilities, expert operators and a spirit to serve and you will see why so many of the large mills choose Swenson.

The recent addition of the Mount System of lime recovery and causticizing equipment has widened the scope of Swenson service in the pulp mill field. Let our engineers work with you on your recovery problems.

Descriptive bulletins gladly sent on request.

SWENSON EVAPORATOR CO.

(Subsidiary of Whiting Corporation)

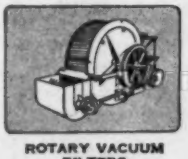
15673 Lathrop Ave., HARVEY, ILL. (Chicago Suburb)

SWENSON

BASKET TYPE EVAPORATORS

VERTICAL TYPE EVAPORATORS

HORIZONTAL TUBE EVAPORATORS


ROTARY VACUUM FILTERS

CONTINUOUS CRYSTALLIZERS

YARYAN EVAPORATORS

Massachusetts laws with $1,300,000 capital stock. Edward S. Towne is president and Frank B. Towne, treasurer. $300,000 of the capital stock is classed as employees shares.

Attleboro Paper Products Co. of Attleboro, Mass., has been incorporated with $100,000 capital stock. James F. Cowan is president and Joseph F. Rioux, treasurer.

A contract has been let by Bird & Son, Inc., for new construction at their East Walpole mills.

Willson Revives American Writing Paper Co.

The December 1 issue of "Forbes" contains an article outlining the splendid work done by Sidney L. Willson, president of the American Writing Paper Co., during the short period of four years, during which time the company has risen from a state of insolvency to earnings of a million dollars a year.

Mr. Willson was made president of the company in 1923 and shortly thereafter receiver, as the unanimous choice of creditors, bondholders and stockholders.

It was pure chance that led Mr. Willson into the industry. He was admitted to the bar in Nebraska, but he could not stand the idle waiting for clients that is the lot of young lawyers. Upon going to Denver in search of employment, he found temporary work in a small stationery shop. He became interested in the business and made a number of friends among those in the industry, and during the next twenty-five years he advanced from one paper company to another, leaving the vice-presidency of the Graham Paper Co. in 1923 to go with the American Writing Paper Co. as vice-president. At that time the company was insolvent, and Mr. Willson had to be urged to make the connection. Shortly after becoming associated with the company, he was made president upon the resignation of his predecessor.

Mr. Willson modestly insists that his achievements have been due to the help of able assistants, horse sense and good luck. But it is said his assistants were picked by him, which shows unusual judgment; horse sense is very rare, and in the long run luck averages up.

Another line of paper that is distinctly new made its appearance on the market during December. It is called Argonaut and is the product of Holyoke Card & Paper Co., of Springfield. It is a cover paper with built-in floral finish in nine unusual colors.

Andrew Jackson Tucker, widely known in paper manufacturing circles as president and treasurer of the Cheney Bigelow Wire Works of Springfield, Mass., manufacturers of paper mill wires, died last month at his home in Springfield, at the age of 69.

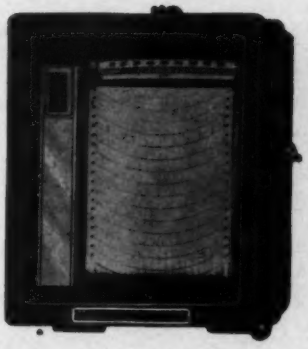
G. E. Organization Changes

H. F. T. Erben, assistant vice president of the General Electric Co., retired on January 1, 1928, after more than 40 years of service with that company. At the time of his retirement he was also vice chairman of the General Electric manufacturing Committee.

B. L. Delack has been appointed manager of the Schenectady plant of the General Electric Co. as of January 1, 1928. E. A. Wagner has been appointed manager of the Pittsfield, Mass., plant of the General Electric Co., effective January 1, 1928.

Sales organization changes include the appointment of C. N. Gregory as manager of the New Haven, Conn., office, succeeding Frederic Cutts, and R. B. Ransom has been appointed resident agent in charge of the Hartford office, succeeding Mr. Gregory.

Wm. Byron Rufe, secretary of Jenkins Bros., New York, died in Brooklyn November 27, 1927. Mr. Rufe was 56 years of age, and had almost completed 40 years of service with Jenkins Bros.



Bristol's Recording Tachometers

of real value as aids in controlling production

THEIR use in promoting better control of paper machine operation for example, opens up new possibilities for maximum speeds while at the same time assuring the maintenance of uniform quality in paper produced. Quoting from an article appearing in a recent technical publication, this particular adaptation of Bristols' Recording Tachometers is described. The article states: "It is quite generally held that the installation of Tachometers on high speed paper machines is particularly desirable, since it is difficult to judge the paper speed with any reasonable accuracy by any other method. In view of the very natural desire to maintain as high a rate of speed as feasible; to attain the maximum production commensurate with the quality of the product, this is one of the most potent reasons for such installations, particularly as it is the constancy, or uniformity, of the rate of paper travel so accurately determined by the Tachometer which is the best safe-guard against excessive paper breakage. An instrument which both indicates and records paper speeds is essential, obviously, in determining occasional speed fluctuations which might readily cause breaks when operating at or near maximum speed for a given quality of paper."

The Bristol's Tachometer illustrated here is the Strip Chart Model, which can be set to make a continuous record of 45, 30 or 15 days duration.

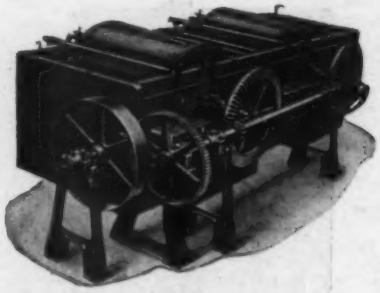
Write for complete information.

The Bristol Company Waterbury, Connecticut

FOR 38 YEARS MAKERS OF BRISTOL'S RECORDING INSTRUMENTS

BRANCH OFFICES:

Boston	Detroit
New York	Chicago
Philadelphia	St. Louis
Pittsburgh	Denver
Birmingham	San Francisco



Bleached Sulphite Washer

TWO A. D. WOOD CYLINDER TYPE

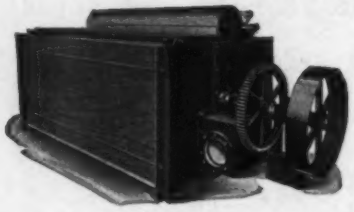
A high efficiency machine handling large capacity with low power and minimum upkeep.

Absence of couch or doctor and continuous self cleaning wire are important features in handling stock containing bleach liquor.

Simply and strongly constructed.

Our new collars ABSOLUTELY ELIMINATE losses by sealing straps. Furnished at nominal cost.

SEND YOUR ORDER AND GET THE BEST

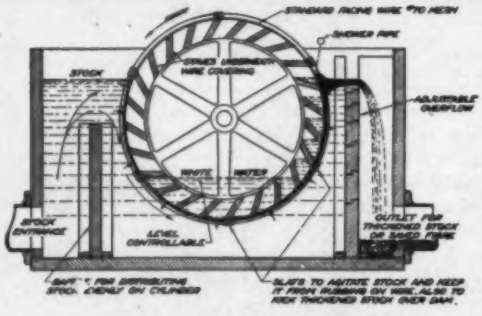


Decker and Decker Washer

We make many styles which are designed for various mill conditions and from an operating standpoint.

Our name on these machines gives you the assurance of many years of satisfactory performance.

The Walker Attachment is applicable to any model or to your present decker. It will increase their capacity 33% at negligible cost.



A. D. Wood Save-all

The A. D. Wood Machine as a Save-all is unique.

New sealing collars and ease of patching the wire mean maximum efficiency.

Simplicity, self-cleaning wire and continuous high capacity give satisfaction and greater savings.

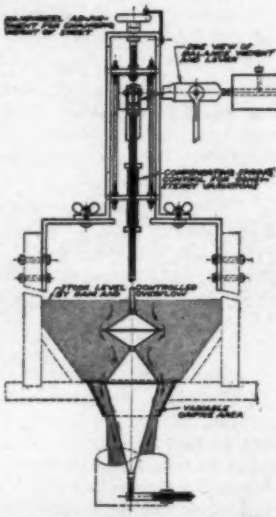
We have reports of 90-95% efficiency for a four year period

Boivin Weight Regulator

FOR FOURDRINIER MACHINES

More than 50 already giving invaluable service on fast and slow speed machines, handling all kinds of stock. Install it, adjust to give desired weight, and leave it alone. Overweight claims eliminated, with big improvement in broke loss and running conditions. Handles capacities ranging from 15 to 150 tons with equal efficiency. Sensitive action and direct control.

Write Us Now for Details



PULP AND PAPER MILL MACHINERY
GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

See pages 342 to 343 in the 1927 Paper and Pulp Mill Catalogue

NORTHERN NEW YORK NEWS

The Biggest Machine in the World

Construction of the largest paper making machine in the world has just been started by the Bagley & Sewall Co. of Watertown for the Backus Brooks Co. of Minneapolis, and will be installed in its Fort William, Ont., mill. The new machine will be a four-roll machine and will have a 304-inch wire.

It is the belief of C. W. Valentine, president of the Bagley & Sewall Co., that the limit has now been reached and there will be no further increase in the size of paper mill machines. Increases in paper machines is generally spoken of in fractions of inches and the new machine will be a big advance, also will enable the company to double the tonnage with the same working crew. It is not so long ago that a 164-inch machine was considered unusually large among the paper manufacturers.

Frank P. Wilder of Carthage, well known in the paper industry, has accepted a position as sales manager for H. Waterbury & Son, of Oriskany, with Washington, Oregon and California as his territory.

Decision handed down by Judge Frank Cooper of the federal court holds that the International Burr Corp. of this city has been infringing upon patents held by the Wood Grinding Service, Inc., also of Watertown. An injunction order restraining the International Burr Corp. from further infringements is granted in the order which also provides for an accounting to the Wood Grinding Service, Inc.

New Process of Pulp Making

The United States patent office has just granted a patent to August F. Richter of the Stebbins Engineering Co. and Frank A. Augsbury of Ogdensburg for their invention of a method and apparatus for treating pulp and other fibrous material, which it is believed will considerably expedite the making of paper and allied products. The patent rights, which have been pending since July, 1926, have been assigned to the Stebbins Engineering Co.

The new method of treating fibrous material consists of using a waste product which has heretofore been allowed to escape. The material, according to the new plan, is placed in closed chambers and digested by means of acid under heat and pressure. During this process high and low pressure gas is given off the mixture. This gas is led into a separate chamber containing acid liquor under pressure, which absorbs the gas and much of the heat from the gas. The heated liquor is then led into a digesting chamber where, because of the gas and heat it has picked up from contact with the waste gas, it more readily does the work of digestion. It is thought that this reciprocal process will speed up the treatment of fibrous materials to a considerable extent.

The Jefferson County board of supervisors has taken steps to acquire waste land under the state conservation law, for the purpose of reforestation. There are thousands of acres in Jefferson county which have been denuded and are worthless for agricultural purposes which ultimately will be devoted to reforestation.

The judgment recently awarded by the court of appeals in favor of McDougall & Cowans, Montreal bankers, against the Ticonderoga Pulp and Paper Co., has been filed in Essex County, showing that the judgment had been satisfied. This brought to a close litigation which was started several years ago in the Canadian courts where the bankers obtained judgment for the full amount of their claim. The Ticonderoga company then took the case to the privy council, the highest appeal court of England, where the finding was affirmed. Over two years ago suit was brought in New York State on the basis of the judgment. The trial court would

Six 10-inch Warren stock pumps, part of an order of 12 of the same size.

A Test Decided This Order

This contract for 12 stock pumps and orders for 14 other Warren Pumps were placed as the result of competitive performance tests and careful consideration of design.

It will pay you to investigate the savings which can be made by installing Warren Centrifugal or Reciprocating Pumps in your plant. Write for Bulletins covering the services in which you are interested.

Agencies in the following cities:

Atlanta
Boston
Charlotte
Cleveland
Dallas
New Orleans
New York
Oklahoma City
Philadelphia
Pittsburgh
St. Louis
St. Paul
San Francisco
Scranton
Toronto

Warren

Steam Pump Company

Incorporated

Warren, Mass.

1419

An Important Announcement!

We wish to announce that we have recently sold all manufacturing and sales rights on the Semco Automatic Receiver Pump in:

The United States and American possessions, also Cuba and Mexico,
to: **W. B. Connor Inc., New York City.**

The Dominion of Canada,
to: **Canadian Ingersoll-Rand Co., Montreal, Quebec, Canada.**

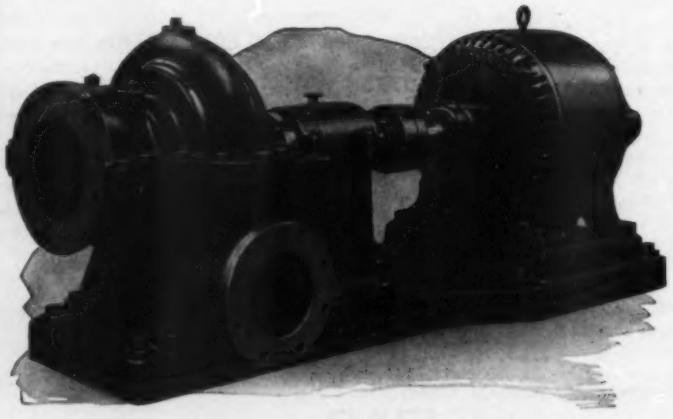
Both W. B. Connor Inc., and the Canadian Ingersoll-Rand Co., have large forces of sales representatives who are able to cover the paper manufacturing field thoroughly and to give your individual conditions an accurate and personal survey.

They will be greatly interested in receiving your inquiries.

Stebbins Engineering & Mfg. Co.

WATERTOWN, N. Y.

NEW DEVELOPMENTS IN PAPER STOCK PUMPING ARE OF INTEREST TO PAPER MILLS



In this connection the improved Allis-Chalmers Paper Stock Pump merits your investigation.

You can obtain from us on request, a data sheet for outlining your paper stock pumping requirement for our recommendations.

ALLIS-CHALMERS MANUFACTURING CO.
MILWAUKEE, WIS. U.S.A.

have to be retried in this state, but this was reversed by the court of appeals. This was said to be the first time in history that a decision of the English courts was allowed to stand in this state.

New Machine Starts

The second machine of the Harrisville Paper Corp., formerly the Diana mill, was started recently. The new pulp mill of the St. Regis Co. at Raymondville, was started up a few days later. The Harrisville mill which was taken over by St. Regis interests, has been operating one machine until now. Catalogue and newsprint are being manufactured.

The new pulp mill at Raymondville is considered to be a model plant. It is equipped with the latest machinery and is electrically operated throughout. The grinder room consists of three lines of three stones each. Each grinder is a four pocket machine, a late invention which is considered much better than the three pocket type. The new unit at Norfolk, another in the St. Regis group, also went into operation the first week in January.

Power for the Hanna group will be furnished by the Northern New York Utilities instead of by the Aluminum Co. of America. The grinder room of the Raymondville mill was formerly operated by water power but it has been changed over to electrical operation.

Murray Iron Works Buys Standard Turbine Corp.

The Murray Iron Works Co., of Burlington, Iowa, has bought the steam turbine business of the Standard Turbine Corp. of Scio, N. Y. The equipment has been removed to Burlington and work continued under the direction of Mr. J. Y. Dahlstrand, former president and engineer of the Standard Turbine Corp. and known as one of the leading turbine engineers of this country.

Mr. Dahlstrand developed and perfected the Standard Turbine, and his valuable patents have been assigned to the Murray Iron Works Co. Among these patents are those covering the use of a multiplicity of nozzles of adjustable expansion ratio which may be opened independently, enabling the same frame and motor to be operated at maximum economy and efficiency over wide ranges of steam conditions and power demand.

These turbines have found great favor with the U. S. Government and the steel industry. Many other industries use them for driving generators, blowers, pumps, stokers and pulverizers.

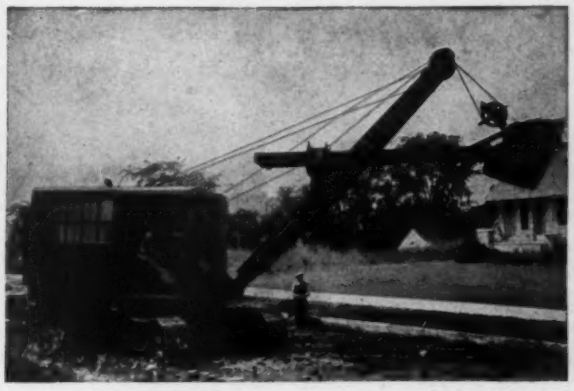
The Murray Iron Works Co. are well known as builders of Corliss and Una-Flow engines, high duty pumping engines, watertube boilers (vertical and horizontal) tubular and internally fired boilers and the steam turbines complete this line of power plant machinery.

It is expected that the existing sales representatives of the Standard Turbine will continue their interest in the turbines. The owners of machines now in operation can rely upon getting parts from the Murray Iron Works Co. as all records, patterns, etc., are now in Burlington.

The biggest pulp wood contract ever executed in one year in Northern New York has been completed by the St. Regis Paper Co. at McDonald in the Adirondacks. The cut was made on the William Rockefeller tract of 30,000 acres. It is estimated that if all the logs were placed end to end they would extend 1,700 miles. The logs will be conveyed to the St. Regis mills at Deferiet and will be made into catalogue paper for Montgomery Ward Co. of Chicago.

A number of employees of the Algonquin Paper Corp. of Ogdensburg were seriously gassed by sulphuric acid fumes in the digester room of the plant.

The manufacture of bags in the new Taggart bag factory at Oswego will be started this month, it is announced. The machinery is now nearly installed. In the beginning, kraft paper will be shipped to Oswego from the mill of the Cham-



"AMERICAN GOPHER"
Shovel Crane

An All-Steel Machine

The "AMERICAN GOPHER" Shovel-Crane, the all steel machine with the low up-keep cost, is the very last word in crawler type shovel cranes, possessing many advantages over machines you may have used in the past.

The following are just a few of the superior features of the "AMERICAN GOPHER" Shovel-Crane.

All heavy duty shafts are nickel chrome steel; heat treated;

All shafting over-size;

SKF Ball Bearings used wherever practicable;

All castings annealed, carbon or alloy steel;

All spur gears above deck have cut teeth;

Fewer parts; less danger of delay;

Parts are interchangeable wherever possible;

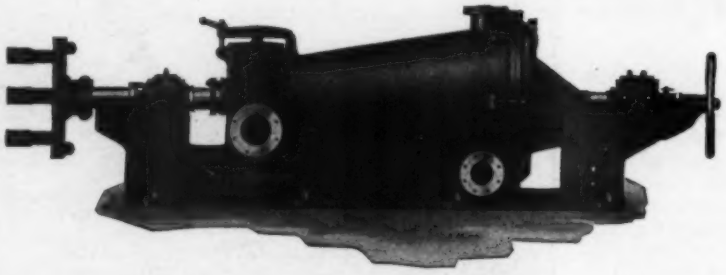
Crawler treads, cast chrome steel;

Machinery deck, one large single-piece casting;

High pressure lubrication used all over the machine;

Descriptive literature sent on request.

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, St. Louis, New Orleans.



No. 3 Hercules Jordan—Timken Mounted

The No. 3 Hercules is revolutionizing Jordan design.

Paper Mill experience and experiments combined with common sense engineering produced this remarkable machine. Let us tell you about it. Write.

THE HERMANN MANUFACTURING CO.

Lancaster, Ohio

A. H. COX and CO.
Seattle, Wash.

- or -

WATEROUS LTD.
Brantford, Ontario

The Promise of Strength AND Durability

IS FULFILLED IN OUR

TENAX FELTS

FOR FURTHER DETAILS WRITE

LOCKPORT FELT CO.

NEWFANE, NEW YORK

pion Paper Co. About April 1 the paper machines in the Oswego plant will be in operation. The entire process will then take place at the Oswego plant.

A final canvass of the votes for the fifth vice president of the International Brotherhood of Paper Makers, shows that Joseph Addy of Troy was elected over Simeon Weir of International Falls, Minn. A. F. McLeod of Espanola, Ont., defeated Arthur D'Aoust of Hull, P. Q., for delegate to the Dominion Trades Congress.

The hearing before the Interstate Commerce Commission in the case of the St. Regis Paper Co. against the New York Central and others for adjustment of freight rates on paper products has been finished.

St. Regis Closes Contract

The St. Regis Paper Co. has made an agreement with the Johns-Manville Corp. to add to its sales line a new type of all-wood roofing, sheeting and insulating board to be manufactured by the St. Regis Co. The Oswego Board Corporation, a subsidiary of the St. Regis, is building a $1,500,000 mill at Oswego to make the new product. It will be ready April 1 and the capacity will be 400,000 feet daily.

The insulating board will be manufactured from waste pulp wood, material cores and other waste material. All the material will be shipped from the Deferiet plant of the St. Regis. The new board will be similar to beaver board but it will be chemically treated to make it fire proof.

George M. McKee, formerly of Ogdensburg, is a director of the new Quebec Pulp and Paper Corp. of Canada, formed to take over the property of the Quebec Pulp and Paper Mills, Ltd. Mr. McKee built the Algonquin Paper Co. mill at Ogdensburg and was its manager until three years ago, when he went to Montreal to become president of the Port Alfred Pulp and Paper Co.

Two small fires occurred at the Carthage mill of the National Paper Products Co., during December. Little damage was done.

The Paperboard Industries Association will meet at the Palmer House, Chicago, Ill. January 18 and 19, 1928. Interesting programs are being prepared and all indications are that the sessions will be well attended.

Progress in Stream Purification Survey

C. M. Baker, engineer of the American Paper and Pulp Association, recently employed to co-ordinate and develop the waste utilization and stream improvement activities of the pulp and paper industries, has just completed a preliminary survey in several states including Michigan, Ohio, North Carolina, Virginia, and Maryland. Mr. Baker conferred with both mill and state officials to secure preliminary data regarding the stream purification and waste prevention activities of the mills, and the policies of state officials.

"While some of the States visited," he says, "have laws prohibiting stream pollution, the enforcement of which would seriously handicap or even close certain industries, yet the officials in these States have adopted practical and constructive policies and are endeavoring to co-operate with industry in studying the various problems involved and improving conditions. Many of the paper and pulp mills have already done much to improve conditions with reference to stream pollution and all appear to be alive to the situation and indicate an excellent spirit of co-operation."

In January and February Mr. Baker will continue his preliminary survey in the northeastern States and will report to the American Paper & Pulp Association at its annual meeting on February 21, 1928, regarding policies and procedures in the continuation of his activities, and to the Technical Association regarding the technical phases of the problem.

TANNATE WATERSHED

TANNATE LASTED FIVE TIMES AS LONG AS RUBBER ON A JORDAN

A WISCONSIN company began using Tannate Belting about two years ago. They now have a 3-inch light double governor belt; an 8-inch heavy double on rewinder; two 12-inch heavy doubles on beaters, and a 13-inch heavy double on a Jordan.

The report says, "Well pleased with all of them, especially the 13-inch on the Jordan—a cross belt."

They had been using 14-inch 8-ply rubber belts on the Jordan. These seldom lasted more than three months. The Tannate has been on fifteen months and "promises to run for years."

Rhoads Tannate Belts, with their great strength and unusual grip, are real trouble savers in paper mills.

They will run in water. They are economical.

They are always sold under the Rhoads Service Guarantee.

Use Rhoads Tannate Lace Leather
It outlasts rawhide three to five times

J. E. RHOADS & SONS

PHILADELPHIA.....47 North Sixth Street
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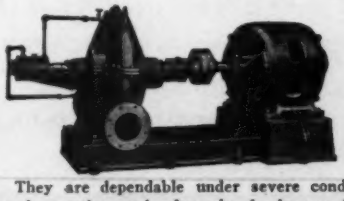
CHICAGO.....334 West Randolph Street
ATLANTA.....80 South Forsyth St., S. W.
CLEVELAND.....1234 W. Ninth Street

Factory and Tannery: Wilmington, Del.



The LAWRENCE "VORTEX" Centrifugal Pumps are built in many types, one of which is suitable for your requirements.

They are dependable under severe conditions and when called on for continuous hard service for long periods do not fail.

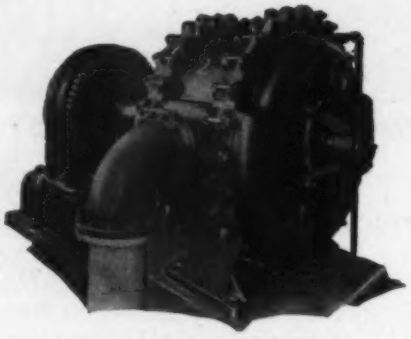
Their excellent design, superior workmanship, careful testing, and conservative rating assure satisfactory results.

Please use P. O. Box 70 in addressing.

Lawrence Pump & Engine Co.

P. O. Box 70 LAWRENCE, MASS.

This pump drive is reliable



Nash Hytor Vacuum Pump, direct connected to synchronous motor.

Nash Hytor Vacuum Pumps in paper mill service are often required to run night and day without interruption. To operate at full load capacity for months at a time.

Under such exacting conditions, dependable service is assured by the use of synchronous motor drive. You can connect synchronous motors direct to Nash Pumps. The rotor of the motor is mounted on the same shaft as the pump impeller.

A reliable, compact arrangement!

NASH ENGINEERING COMPANY
161 Wilson Road So. Norwalk, Conn.

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Nash Hytor
VACUUM PUMPS AND COMPRESSORS

No power loss with Daniel's P. P. P.

This Rod Packing adjusts its bearing to suit the steam pressure in the cylinders, and therefore will not bind the rod.
Absence of rod friction permits full engine power transmission, and gives long life to packing.
If your dealer cannot supply you promptly, write us.

QUAKER CITY RUBBER CO.
WISSINOMING, PHILADELPHIA
Branches: New York, Chicago, Pittsburgh, San Francisco

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.

"TWENTY TIMES FASTER THAN BY HAND"

For lifting paper rolls, removing calender rolls or raising Fourdrinier wires, use ROEPER Type "R" Electric Hoists—With or without Trolleys—Speeds up to 40 feet per minute—Send for Bulletins.

ROEPER CRANE & HOIST WORKS, Inc.
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THE JOHNSON FRICTION CLUTCH

Ideal clutch for use in the paper industry. Write for Catalog P. I.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

NEW YORK CITY NEWS

Paper Stock Dealers Elect Officers

The New York Association of Dealers in Paper Mill Supplies, Inc., held its annual meeting and election of officers at the Hotel Brevoort, New York, on the evening of December 14, at which Joseph P. Gaccione, of Gaccione Bros. & Co., Inc., was re-elected president for the ensuing year. The nominating committee, proposed that all the officers of the association be re-elected, consequently Mr. Gaccione was retained as president, Joseph Benedetto, of D. Benedetto, was again chosen vice president; Walter H. Martens, of George W. Millar & Co., Inc., was re-elected treasurer, and Alfred J. Moran, of A. J. Moran & Co., Inc., was again made secretary. The Executive Committee of the organization, as elected, consists of the above four officers together with Louis F. Darmstadt, George Carrizzo, Michael Stramiello, J. J. Patricof, Joseph Carrano, James Mastronardi, Anthony S. Gaccione and Charles Passanante.

It was announced at the meeting that the annual banquet of the association will be given on the evening of February 22, 1928, in the Hotel Astor, New York, this date being Washington's Birthday and coming during the week the American Paper and Pulp Association will hold its annual convention in New York.

To Sell St. Regis Product

An agreement has been made between the St. Regis Paper Co., and the Johns-Manville Corp., whereby the latter will add to its sales line a new type of all wood roofing sheathing and insulating board to be manufactured by the St. Regis Paper Company. The St. Regis Company, through its wholly owned subsidiary known as the Oswego Board Corp., will erect a plant at Oswego, N. Y., to manufacture the new product. The new mill will cost $2,000,000, and upon completion about April 1, 1928, will have a capacity of 400,000 feet of the new product daily.

Vice-President Nickenig of the New York Division of the Salesmen's Association of the Paper Industry has appointed the following 1928 Banquet Committee to arrange for the annual banquet of the association in New York in February: George H. Attfield, Eastern Manufacturing Co., chairman; Harold H. Hopkins, Oxford Paper Co.; G. R. Spies, Kalamazoo Vegetable Parchment Co.; S. C. Knode, Albemarle Paper Co., and Alan B. Helffrich, Orono Pulp and Paper Co.

Joseph N. Viot

Friends in New York City were grieved to learn of the sudden death of Joseph N. Viot, treasurer and general manager of Case & Marshall, Inc., manufacturers of paper specialties and box board of Burnside, Conn., which occurred on December 17 at his home in South Manchester, Conn.

Mr. Viot was 53 years old, and had been with Case & Marshall, Inc., for some 25 years. Besides managing the mill of Case & Marshall, Inc., at Burnside, Mr. Viot also ran the mill of Case Bros., Inc., in South Manchester, Conn. A widow survives.

George M. La Monte

George M. La Monte, president of George La Monte & Son, safety paper manufacturers of Nutley, N. J., and New York City, died December 24, at the Hotel Weylin, New York. Funeral services were held at his home in Bound Brook, N. J., on Monday, December 26.

Mr. La Monte was born in Danville, Va., in 1863. He was a graduate of Wesleyan University. He became early identified with New Jersey legislative affairs, and served as an assemblyman, Democratic presidential elector and a delegate to the Democratic National Convention. When Presi-

BOWSER

Bowser and Western Electric

Manufacturers of fine products in one line seem inevitably to gravitate to the outstanding products in other lines.

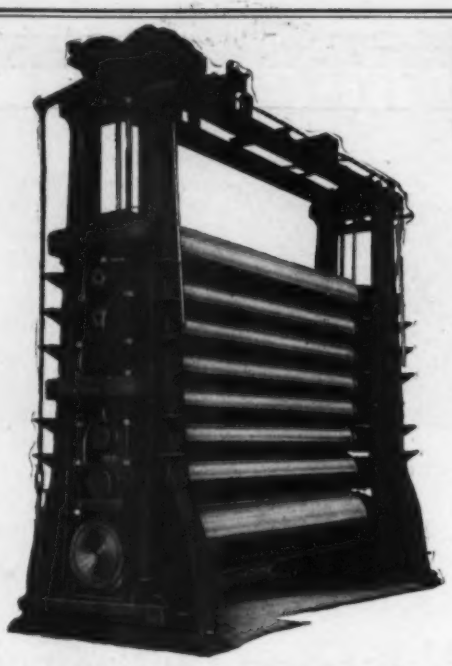
Western Electric has used Bowser oil storage systems in the past—which may likely be the real reason why Bowser systems are in the new Kearny works.

Your oil storage and distributing problems may not be as complex or large as those of the Western Electric Company—or they may be even more difficult. In either case, ask Bowser what to do—our engineers can help you. Address Dept. 3, please.

Canadian address: 52 Fraser Ave., Toronto

S.F. BOWSER & COMPANY, Inc.
LUBRICATION ENGINEERS AND MANUFACTURERS
FORT WAYNE, INDIANA, U.S.A.

LUBRICATORS-OIL FILTERS-OILING SYSTEMS-ACCESSORIES
OIL STORAGE AND DISTRIBUTION SYSTEMS



LOBDELL

CHILLED IRON ROLLS
AND
MACHINE CALENDER STACKS

Specified on your new machines or for the new rolls for your old stack insure rolls of maximum hardness and perfect finish.

Calender Stacks are equipped with Electric Motor, Hydraulic, or Ratchet Lift all operated from the floor.

Improved Oiling Systems can be furnished either completely circulating with oil filter and sight feed or closed end ring oiling boxes or a combination of both.

Ask for your copy of our treatise on the Care and Upkeep of Paper Mill Rolls.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

dent Wilson was governor of New Jersey, Mr. La Monte received from him the appointment of State Commissioner of Banking and Insurance and occupied the post for five years. In 1919 he was the Democratic nominee for United States Senator.

In addition to being head of the firm of George La Monte & Son, he was a director of the Prudential Insurance Co. He is survived by his wife, Mrs. Anna La Monte, two sons, George V. and Archibald D. La Monte, of Bound Brook, and a daughter, Mrs. E. B. Hackett, of New York.

Arthur N. Waring, distributor of paper and paper products, is now located at 52 Vanderbilt Ave., New York City, his new telephone number being Murray Hill 2331.

The operation of the Mead Pulp and Paper Co., in New York is now being carried on by the Mead Sales Co., Inc., of 366 Madison Ave., New York. The latter organization has taken over all the assets and obligations of Mead, Patton & Co., which has ceased functioning.

The J. J. Murphy Paper Co., Inc., one of the well known paper jobbing concerns in New York City, located at 102 Prince street, has added a paper mill supply department to its business, which will specialize in new cotton and linen cuttings and old cotton rags under the management of Samuel Frank.

The Alfred Paper Stock Co., of 671 Water St., New York, has been incorporated under New York State laws to pack and deal in paper mill supplies with a capital stock of $20,000.

Ivan Sorvall, well-known among paper manufacturers as a wood pulp salesman, formerly with the Perkins-Goodwin Co., and the E. M. Sergeant Co., Inc., is now associated with the Daniel M. Hicks, Inc., of 200 Fifth Ave., New York, in the wood pulp department of the company.

C. Marshall Taylor has been appointed vice president and general manager of the Curtin-Howe Corp., 11 Park Place, New York City, who hold the commercial rights to the new wood preservative, zinc meta-arsenite, which has been developed by the Engineering laboratories of the Western Union Telegraph Co., as its standard preservative.

J. Vincent Kroll and Arthur Halpern are recent additions to the selling staff of the William G. Willmann Paper Co., Inc., of 51 Beekman street, New York. Both Messrs. Kroll and Halpern have had much experience in the paper trade.

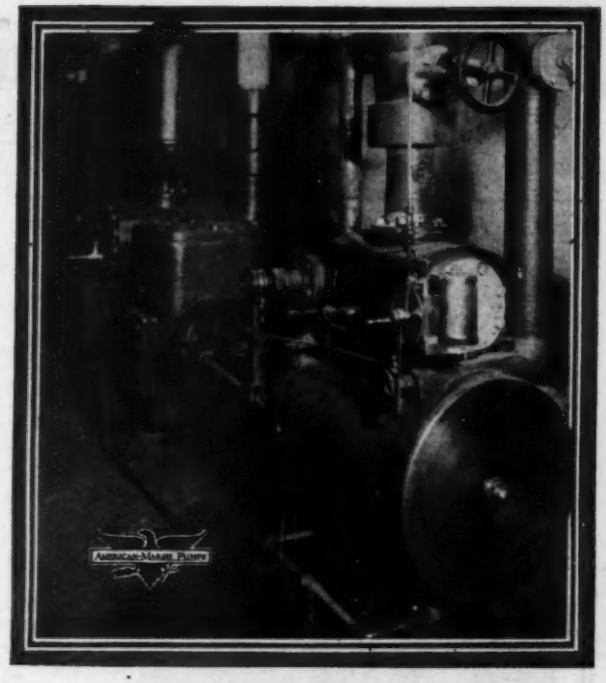
The Combustion Engineering Corp., New York City, has recently received through its British subsidiary an order from The Synthetic Ammonia and Nitrates, Ltd., at Billingham-on-Tees, England, for the largest high pressure boiler plant in the world.

The Norwood Engineering Co., Florence, Mass., manufacturers of filters, super-calenders, platers and other paper finishing machinery, is running at full capacity on new equipment for various paper mills throughout the country. A busy and prosperous year is expected.

Order for Big Belt

It seems the day of big belts is still with us, especially as applying to installations where the economy of group driving of machines is a considerable factor. This is evidenced by a recent order received by J. E. Rhoads & Sons from a Minnesota paper mill for a 72-inch, 3-ply watershed leather belt.

The function of this belt is to drive 22 beaters and three Jordans. The load is about 1,500 h. p., probably often more. This belt has the advantage of running at high speed, 5,186 r. p. m.



American-Marsh Boiler-Feed Pump, outside center packed, 125 pounds pressure.

Friends in Mills Everywhere

IT IS significant that to date this company has over 200,000 pumps installed throughout industry, of which a goodly portion are operating in your field. Such wide-spread acceptance is invariably an indication of but one thing—an exceptionally fine product. Keeping pace with every advancement, modern, efficient, unfailing—certainly is this true of American-Marsh equipment which has made friends in paper mills the country over.

If you are not familiar with American-Marsh pumps, it will pay you to investigate. Write for Bulletins. Better still, have our engineers submit a definite recommendation and cost estimate to meet your particular requirements.

AMERICAN-MARSH

AMERICAN STEAM PUMP COMPANY
BATTLE CREEK, MICHIGAN, U. S. A.

Complete Line—Centrifugal and Steam Pumps

If you are in the market for any used paper or pulp Mill machinery, write to us. We have at all times, good used paper machines, calender stacks, beaters, Jordans, Rotary and Flat Paper Cutters, Slitters & Rewinders, etc., etc. We also would be glad to have your list if you have any good used equipment for sale.

Address:-

Gibbs-Brower Co., Inc.

Paper and Pulp Mill Brokers
261 Broadway, New York City
Telephone—Barclay 8020
Our Motto: *"SERVICE FIRST"*

FOR SALE:—

Two—750 KW G. E. Turbo generator sets. Turbines three stage, Curtis Bleeder Type, 3600 R.P.M., operating on 125 pounds steam pressure, complete with a Westinghouse 1300 sq. ft. surface condenser and accessories. The generators are 937 KVA machines of 750 KW at 80% power factor, and operate on 440 volts, 60 cycle, 3 phase current. This equipment is complete with switchboard, exciter and panels and is located in New York City.

These machines were new in 1922 and we discontinued their operation in the summer of 1926. They were in first class operating condition when taken out of service.

If interested, please write the United States Gypsum Company at 300 West Adams Street, Chicago, Illinois.

WANTED: A paper mill engineer. Must be university graduate with at least 5 years of paper and pulp mill experience. State experience, training, age and present salary. Address Box 134, The Paper Industry.

PRESSURE PIPE THAT NEVER BURSTS
Built in sizes 1 inch to 48 inches

WYCKOFF WOOD PIPE

The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for White Water, Paper Stock, and Acids that can be obtained

WRITE TODAY FOR CATALOG AND PRICES

A. WYCKOFF & SON COMPANY

1855 Elmira, N. Y., U. S. A. 1927

PAPER MILL MACHINERY

One 72" Pusey-Jones Fourdrinier Part. Takes wire 74" by 50 ft.

One 129" Hamblet duplex sheet cutter with layboy and six roll stand.

One 134" Pusey & Jones Uniform speed reel.

One 130" Moore & White four drum winder with slitter attachment.

Three Beloit triplex stuff pumps 10x20.

Two Pulp breakers, Noble & Wood, 1200 lbs.

Four beaters, Horne, 54" x 48" with wood tubs.

All above equipment in excellent condition, installed new in 1923.

51 Dryers 36" x 72" with frames, felt equipment.

One reel, two drum upright.

One 68" duplex sheet cutter, Downingtown.

One 72" Moore & White four drum winder.

Three Dayton beater rolls 66" x 60".

Two 72" Baker wet machines.

Two 3 pocket grinders with sones 54" x 27" direct connected to G. E. motor, 2200 volts, 60 cycles, 240 r.p.m.

For Sale By

FRANK H. DAVIS COMPANY

175 Richdale Avenue, Cambridge, Mass.

Ham Feltz sez:

"Shoppin' around to get the best wet felt you kin find is one way to cheat the coal pile. It's cheaper to let the water run through a High Grade Hamilton wet felt than to sweat it out of the paper with high cost steam. Check it up as I've done and yuz'll find it a case of only dimes against dollars."

Hamilton Felts

L. V. ESTES INCORPORATED

Industrial Engineers

Specializing in

LABOR COST REDUCTION AND MATERIAL HANDLING

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Catalogues, Books & Publications

When writing for any of the following, please mention THE PAPER INDUSTRY

Combustion Engineering Corp., New York City—"The Design of Furnaces for Pulverized Coal" is the subject of a pamphlet giving theories and principles that are applicable to present day requirements, and covering the subjects of rate of combustion, turbulence, inflammability, wall temperature and combustion. Curves illustrating the speed of flame propagation are given.

Erie City Iron Works, Erie Pa.—"Some Fundamentals of Water-cooled Furnace Design" explains the use of the outstanding types of water-cooled furnaces. Charts, data and illustrations combine to make this article of value to the engineer interested in getting the most out of pulverized coal. "The Erie City Vortex Furnace," is the title of a leaflet which describes briefly a method of firing small water tube boilers and horizontal return tubular boilers with pulverized coal. Copies upon request.

Flexitallic Gasket Co., Camden N. J.—The Flexitallic gasket for pipe flanges, tube caps and manholes is described in a handy folder containing complete information as to application, prices and dimensions. Copy upon request.

Foote Bros. Gear & Machine Co., Chicago, Ill.—A new catalogue, No. 68, describes and illustrates Plamondon products, friction clutch pulleys and couplings, gears, etc. Complete tables, illustrations and prices are given, and discount sheet enclosed.

W. A. Jones Foundry & Machine Co., Chicago, Ill.—Catalogue No. 35 describes in detail a wide range of this company's worm gear drives and contains valuable information such as chart showing torsional strength of shafting, another showing inch pounds torque for solid round shafts and a formula covering horsepower and torque, for filling speed reducer requirements. Views of medium and heavy duty reducer installations are also shown.

Pennsylvania Pump and Compressor Co., Easton, Pa.—Bulletin No. 209 describes the Pennsylvania Double Suction Single Stage Centrifugal Pumps. A general description with sub-headings is given, instruction as to installations, with descriptive curves and diagrams.

Samuel C. Rogers & Co., Buffalo, N. Y.—This company announces a new illustrated bulletin and price list covering the Rogers Automatic Knife Grinders.

Stephenson Manufacturing Co., Albany, N. Y.—This company has issued two circulars descriptive of its Bar Belt Dressing. Circulars and sample upon request.

Chemical Specifications Yearbook, Chemical Specifications, Inc., 110 W. 42nd St., New York, N. Y.—This book contains general information of value to chemists, manufacturers, jobbers, and all those connected in any way with the chemical industry. The important chemicals are listed with mention of their nature and manufacture, followed by detailed specifications and uses. The book also contains a list of manufacturers, jobbers and importers.

Waste Soda Liquor as a Plant Insecticide

Under the name Cerofob, Prof. Vittorio Casaburi, Via Forio 76, Naples, Italy, has patented a product of the waste liquor of the soda pulp process which it is expected will find considerable employment in agriculture as a medium for spraying insecticides. Cerofob is said to be highly colloidal and possess great adhesive properties so that it is capable of being employed pure, in aqueous solution, or in combination with mineral oils, tobacco extract, lead arsenate, tar oils, creosote, burgundy mixture, or any other approved plant insecticide. The solutions leave a thin film on the surface of foliage which is slowly disassociated by the action of rain or dew.

The process of manufacturing Cerofob from waste soda liquor has been patented in Italy, France, and Spain and applications have been filed in Germany, England, Canada, Australia, South Africa and the United States. Professor Casaburi has been in communication with the Chemical Division of the Bureau of Foreign and Domestic Commerce, Washington, D. C., and appears to be desirous of forming a connection with United States capitalists who are in a position to make the virtues of his waste soda liquor compound better known. He has undertaken to make tests of any liquor that may be sent to him for conversion into Cerofob.

Warren Pumps at the Power Show

One of the exhibits of special interest to engineers connected with the pulp and paper industry at the Power Show in New York last month was that of the Warren Steam Pump Co., Inc., Warren, Mass., an account of which was inadvertently omitted from the detailed descriptions of exhibits published in the December issue of THE PAPER INDUSTRY. Among the exhibits of centrifugal and steam driven reciprocating pumps shown by this company was a 4" single-stage high-speed pump operating up to 3,600 r. p. m.; this was inspected and discussed by all plant engineers with keen interest. The exhibit was in charge of H. W. Hathaway, sales manager of the company, who explained many of the special points of Warren pumps to interested visitors. Some telling pieces of literature pertaining to the service of Warren centrifugal and reciprocating pumps in different industries were distributed. Engineers who were unable for any reason to attend the Power Show would find it to their advantage to write to the company for copies of bulletins covering the designs and performance of pumps used in paper mills. We have learned that after the installation of two Warren centrifugal pumps in one mill of a large company, fifty-seven additional Warren pumps were ordered for the company's other mills.

The Thompson Electric Co., Cleveland, O., has received through the International General Electric Co., an order for 725 Thompson lamp hangers to be shipped to the minister of railways in New Zealand, following several smaller orders for shipment to Australia, India and South America.

The Coty Machine Co. of Watertown has started work on a dozen new paper bag machines.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 28463—Rosin. Bahia, Brazil. Agency desired.

No. 28421—Heavy chemicals, and caustic soda. Amsterdam, Netherlands. Purchase and agency desired.

No. 28545—Paper bag making machinery for making bags of different sizes. Merida, Mexico. Purchase desired.

No. 28548—Bank and bond papers, printing paper, index boards, sulphite writing and coated papers. Wellington, New Zealand. Purchase and agency desired.

No. 28546—Envelope manufacturing machines, small. Benares City, India. Purchase desired.

No. 28547—Newspapers, overissued. Amsterdam, Netherlands. Purchase and agency desired.

No. 28578—Roofing paper and similar products. Medan, Sumatra. Agency desired.

No. 28638—Grinders, artificial stone, for pulp mills. Helsingfors, Finland. Agency desired.

No. 28679—Vulcanized fiber in plates, sheets, tubes and rods. Dresden, Germany. Purchase and agency desired.

No. 28680—Wall paper. Osaka, Japan. Purchase desired.

No. 28681—Writing paper and envelopes. Hamburg, Germany. Purchase and agency desired.

No. 28693—Writing paper and papeteries. Cordoba, Argentina. Purchase and agency desired.

No. 28638—Paper manufacturing machinery. Helsingfors, Finland. Agency desired.

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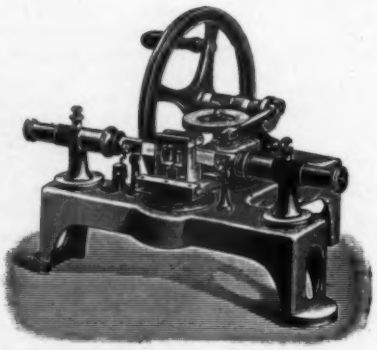
World Standard Paper Testers

All Kinds of Scales

Patented

Schopper-Riegler Beating Tester
Uniformity of beating means better paper.

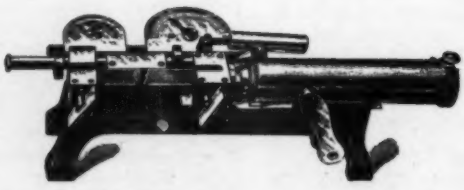
The Schopper Standard Desk Micrometer
Carried in stock—1/1000 of an inch for Boards, 1/2000 of an inch for Paper.



Schopper Folding Tester
The folding test has become standard for bonds, ledgers, and Kraft papers.

Schopper Strength and Stretch Tester

Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



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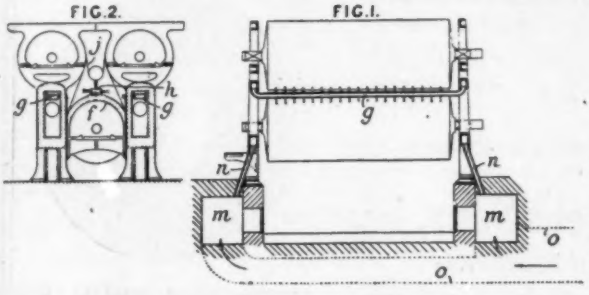
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Paper Calendering and Drying

HOT air is supplied to the spaces between the cylinders of drying and paper calendering machines through the hollow framework of the machine. The air is directed onto



the felts (j), shown in the accompanying illustration, of a paper calendering machine through perforated ducts (g) and (h) connected respectively to the hollow frames and the ducts (f) connecting adjacent frames. The frames communicate through ducts (m) and (n) with an air supply duct (o). British Patent No. 277,181. (S. Milne, patentee.)

Paper from Frozen Pulp

AN INVESTIGATION was carried out by Prof. J. Chintschin in the Moscow Governmental Testing Laboratories to determine the effect of the frozen condition of pulp on the sizing quality of the paper that is manufactured from it. The pulp was beaten in an experimental beater and bleached. Then it was exposed to winter temperatures in the moist condition, that is, with a dry pulp content of fifteen per cent. The temperature was as low as 10 to 20 degrees C. Then a sized paper was prepared from this pulp, the paper sheet being made by hand. It was found that the sizing quality of the paper was very poor.

On the other hand, tests made with the same paper stock, and with the same amount of sizing gave very good results, the sizing quality of the paper being high. It would thus appear that freezing the paper stock caused it to lose the power of swelling and absorbing the size. A similar behavior has been observed in the case of frozen gelatine. The paper stock can of course be subjected to such conditions in countries where the winters are severe. In shipping the pulp, it is advised that the bundles be made very compact so that if any freezing does take place it is limited to the surface of the package only. It is also understandable that paper stock with a high percentage of dry fiber content will be less subject to freezing than that with a low dry fiber content. Bumashnaja Promueschlienmost, through Zellstoff und Papier, 1927, page 530.

Chemistry of Sulphite Digestion

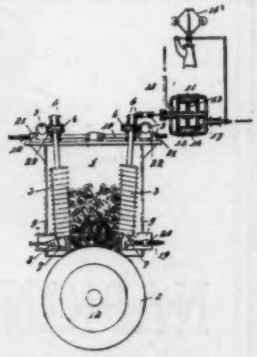
LIGNIN, it has been confirmed, is first converted into a water-insoluble lignosulphonic acid during the sulphite digestion process, or into a salt of lignosulphonic acid. This takes place in the earlier portion of the digestion. The acid hydrolysis of the lignosulphonic acid takes place to a greater degree at the beginning of the digestion than towards the end. The second portion of the process must also be considered as a similar hydrolytic action, which is governed by the temperature of the liquor and the concentration of hydrogen ions in it. The hydrogen ion concentration of calcium sulphite, magnesium sulphite and ammonium sulphite digestion liquors was determined by measuring the speed of inversion of raw sugar solutions.

The hydrogen ion concentration falls first during the progress of digestion which is apparently due to the addition of sulphur dioxide to the lignin molecules. Then the acidity of the solution is increased up to the close of digestion, which is possibly due to the lignosulphonic acid going into solution, this taking place in greater degree than the consumption of sulphur dioxide. In the case of black cooked pulp the hydrogen ion concentration is still greater.

At the beginning of the digestion more pentosans than hexosans are dissolved out of the hemicellulose. The pentosan content of the pulp varies apparently principally in accordance with the hydrolytic action of the digestion liquor. The pulp that is obtained with the aid of calcium sulphite liquors has a higher ash content than that obtained with ammonium sulphite and magnesium sulphite liquors. This is, of course, due to the lesser solubility of the calcium salt. The pulp made with ammonium sulphite has a higher bromine number, but there are no other chemical differences. E. Haegglund, Der Papierfabrikant, volume 24, pages 449-450, 483-88.

Mechanically Feeding Grinders

THE illustration shows a wood grinding machine and the mechanism that has been patented for mechanically feeding the wood to the machine. The grindstone is shown at (2) and the magazine in which the logs are stored during the time that it takes for them to move down and come in contact with the grindstones is shown at (1). The side walls of the magazine are seen to be composed of rotating screw devices (3) which are rotated through suitable gear connection to a prime mover. These screws cause the wood to move down in the magazine and eventually come in contact with the grindstone. United States Patent No. 1,652,044 (G. Nenzel, patentee.)



Nature of Paper Formation

THE splitting up of wood during grinding takes place in three different ways; for example, first, the brushing of the fibers lengthwise; second, the transverse breaking up into short pieces; and third, wearing away with the formation of slime. With ordinary pressure in the beater the first type predominates, with high pressure the second, and with no pressure the third. On the other hand, the ball mill gives a mixture of these. By suitably altering the degree of beating, as high values for strength, etc., can be obtained for a highly bleached sulphite pulp as for a strong fibrous material. The disadvantages of an overcooked or overbleached product lie not so much in the weakness of the fibers as in the fact that it reaches the required degree

Koegel's Patent Ball Bearing

TOP SLITTER

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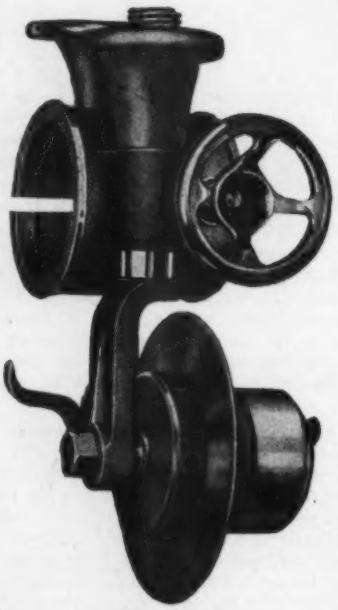
Used on all the latest fast running paper machines.



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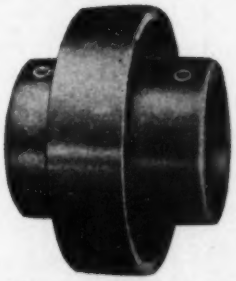

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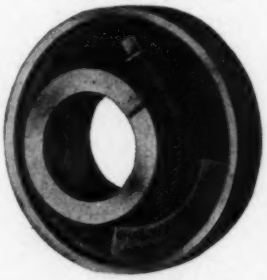

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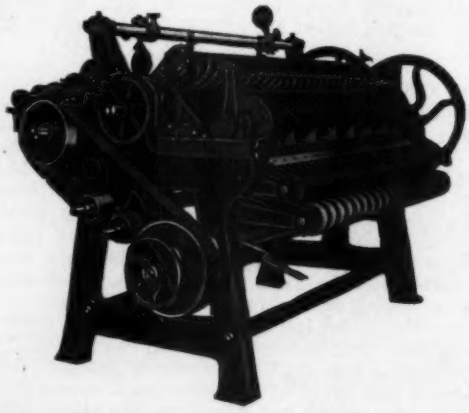


PAPER CUTTERS

Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.

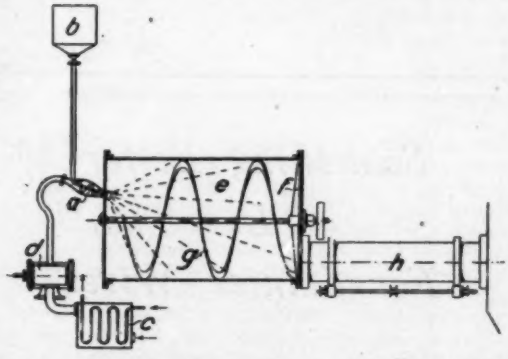
LAWRENCE, MASS.

of beating too easily and swells and forms clods too readily. The final degree of beating depends partly on the original and partly on the acquired composition of the material. Up to thirty per cent loss of strength may result through drying on the machine, air-drying being less harmful, while the permissible temperature depends upon the nature of the material.

This loss of strength is considered to be due to the fact that the material is composed of fibers and slime, the drying hardening the latter to an almost irreversible form. This hardening is overcome by subsequent bleaching, an increase of eight per cent in strength and a decrease of ten per cent in the necessary time of beating being recorded for a treated sample. The addition of sodium hydroxide during beating shortens the time required, but decreases the strength (compared with that when no addition is made). If the time of treatment is prolonged, however, the strength of the material increases. Inferior results are given for the addition of hydrochloric acid. The increase in the strength of paper produced by a suitably long, as opposed to a short, time of beating, is attributed to the fact that, although the fibers are shortened, the felting capacity of the material is increased. Strength also depends on the flexibility of the fibers. In a series of samples the strongest paper was found to have the shortest fiber lengths but the greatest flexibility of fiber. G. Porrvik, Der Papierfabrikant, 1927, 589-596 (volume 25).

Hot Air Dryer for Waste Liquors

GERMAN Patent No. 449,863 is concerned with a hot air dryer which is used in the evaporation to dryness of substances that can be sprayed, such as highly concentrated waste liquors and the like. The apparatus consists of a combination of an atomizing or spraying device and a rotary



and stationary drum dryer. The air is introduced through the spraying nozzle (a) which is made of double walls so that this air can be utilized in causing the atomization of the liquor which is to be dried and which flows down from the container (b). The air is previously heated in the heater (c). As is seen from the accompanying illustration, the air is first sprayed into the rotary drum (e) which is provided with a spiral baffle plate (g), and from this apparatus the air then enters the stationary dryer (h). Effective drying of the materials is obtained in this manner. (Dr. W. Beschnidt, patentee.)

Fluorescence and the Reddening of Sulphite Cellulose

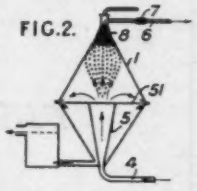
THE reddening of sulphite cellulose is due to the presence of lignosulphonic acid, and if this acid is eliminated from the carbohydrate portion by hydrolysis the remaining material is no longer turned red by oxidation. The fluorescence of sulphite cellulose and of sulphite waste liquor also depends on the presence of lignosulphonic acid, and there is a close relationship between the two phenomena. Cellulose which shows the strongest fluorescence also shows, on oxidation, the deepest red coloration, while that which no longer becomes red shows no violet fluorescence.

The same group in the lignin which is responsible for the reddening of the sulphite cellulose also produces the fluorescence. This group, or constitutional ingredient, is formed or liberated through the sulphonation of the lignin during the cooking process, and, by treatment with oxidizing agents, by air oxidation, or the action of alkalies or dilute acids at elevated temperatures, it is irreversibly changed so that it no longer produces the luminous fluorescence. The latter must be distinguished from the violet color which results from the treatment of wood with acids or acid reacting liquids, or which appears after the removal of the violet fluorescence of the sulphite cellulose or the lignosulphonic acid by oxidation. This violet color is changed to a fluorescent greenish-yellow by the action of alkalies. Neither the violet color nor the greenish-yellow fluorescence appears when the cellulose ceases to give the red color. The results stated apply not only to pine wood but also to Scotch fir and to the sulphite celluloses obtained from both. E. Haegglund and T. Johnson, Zeitschrift fuer angewandte Chemie, 1927, volume 40, pages 1101 to 1104.

Recovering Pulp

IN THE recovery of fibers from liquids, particularly applicable to the treatment of the backwaters of cellulose, paper and wood grinding mills, liquid containing fibers mixed with air or gas as directed upwards by a pipe (4) having a widened mouth (5) in a tank (1) so that the fibers, with the aid of the adhering air or gas bubbles, are lifted and collected in the upper portion of the tank while the clarified liquid is discharged from the lower portion of the tank. The fiber mass (8) is withdrawn by a suction pump through a pipe (6) having a regulating valve (7). The discharger end (5) may have a laterally extending flange or shoulder (51). The apparatus may be combined with a deposition tank for such heavier fibers as sink to the bottom. British Patent No. 277,310. (A. M. R. Karlstrom, patentee.)

FIG.2.

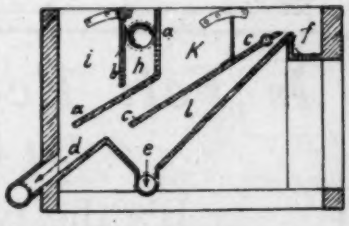


Bleaching Pulp

SULPHATE or kraft pulp is bleached to a fine white color without there being any substantial decrease in its strength by a method which is patented by O. Kress in United States Patent No. 1,651,530 and assigned to the American Lakes Paper Co. The method consists in effecting partial bleach with the aid of an oxidizing bleaching agent. Then the partially bleached pulp is subjected to the action of a reducing bleaching agent in order to reduce and convert the coloring matter that is contained in it. The finally bleaching action is then effected with the acid of a small amount of an oxidizing bleaching agent.

Sand and Knot Catcher

IN THE new form of sand and knot catcher which is shown in the accompanying illustration the machine finished paper stock is led through a container which is filled with water. A constant water level or water pressure is maintained in this apparatus. This is obtained by regulating the check valve (g) and the mixture of paper stock and water in the apparatus is thus kept in motion. The sand knots and other impurities in the paper stock are removed by allowing the stock to flow first into the channel (h), to distribute itself uniformly over the surface of this channel and then to enter the chamber (i) in a layer of uniform depth through the slot that is left adjustably open by means of the movable wall (b). The flow of stock is abruptly reversed at the lower edge of the channel wall (a), with the result that the different heavy materials are separated in accordance with their specific gravities. The heavier materials collect in the funnel shaped collector (d) (e), while the lighter



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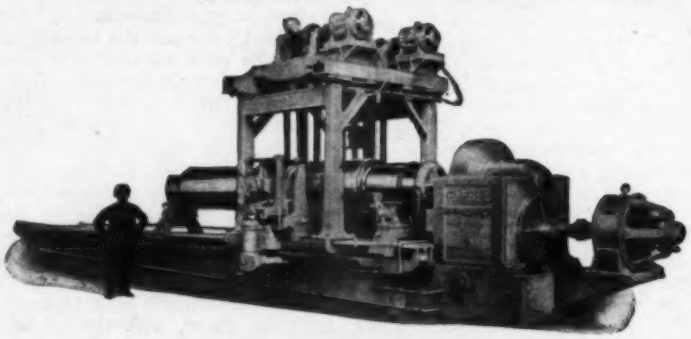

New crowning device, geared head, automatic lubrication. Electrically driven.

FARREL CALENDERS AND CALENDER ROLLS

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The March Issue of

The Paper Industry

will be the big

CONVENTION NUMBER

and will contain the proceedings and many of the papers out of the 51st annual meeting of the American Paper and Pulp Association.

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impurities flow upwards into the overflow channel (f). In order to make possible the separation of almost uniformly heavy materials, the movable and therefore adjustable wall (c). This makes possible the reduction of the flow of lighter materials through the chamber (k) in such a manner that the heavier materials enter chamber (l) and here are made to settle. The result then is that a paper stock of highly uniform condition is obtained and runs off through the channel (f) and from there to the papermaking machine. German Patent No. 447,792. (G. P. Kropp, patentee.)

Indicating Running Weight of Paper During Manufacture

THE paper web, shown at (a) in the accompanying illustration, passes over a metal plate forming the lower earthed plate of a condenser, the upper plate (10) of which is carried by, but insulated from, a bracket (11) carried by a rock shaft (12) by means of which it may be raised to permit adjustment of the paper or lowered into operative

FIG.1.

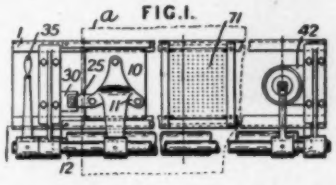


FIG.4.

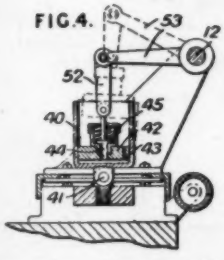
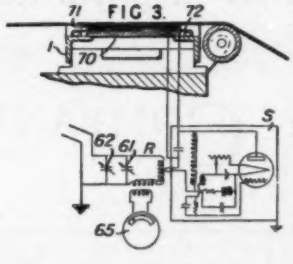


FIG 3.



position. The bracket (11) carries an adjusting screw (25) which rests on fixed abutments (30) and by means of which the plate (10) may be adjusted so as to be out of contact with the paper in its lowered position. The lower plate is also arranged to be out of contact with the paper web. A dash pot enables the plate (10) to be quickly raised by its own weight on release of the handle. The dash pot is shown in figure 4 and comprises a cylinder (40) pivoted at (41), in which works a piston (42) provided with a small bleeder port (43) and with a large central port (44) normally closed by a spring-pressed valve (45) connected by means of a link (52) to an arm (53) carried by the rock-shaft (12). The condenser formed by the plate (10), the lower plate, and the paper web between them is connected in parallel with coarse and fine adjustment condensers (61) and (62), figure 3, by means of which a receiving circuit (R) is tuned to resonance with a screened oscillation-generating circuit (S).

Change in capacity due to change in weight per unit area of the paper web causes detuning of the circuit (R), which is indicated by a change in the reading of a thermo-galvanometer or other instrument (65). Resonance may be restored by adjusting the condensers (61) and (62), the amount of such adjustment being a measure of the change of capacity of the condenser (10). In order to correct for changes in capacity due to changes in moisture content of the paper, a supplementary condenser containing a dielectric of hygroscopic material is arranged beneath the paper web and connected in the oscillation-generating circuit (S). British Patent No. 276,469. Atlantic Precision Co.

Investigations on Beaten and Unbeaten Pulp

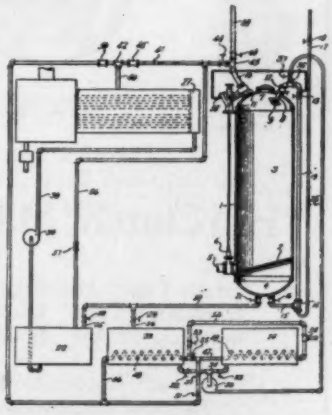
DIFFERENT stocks, although treated in the same manner, will give papers of varying specific gravity and absorptive capacity. The character of the paper is dependent to a large degree on the beating and the pressure exerted during the formation of the paper web. In making a study of the specific gravity of different qualities of paper stock, it is consequently necessary to compare the paper produced from these stocks under similar conditions. A degree of beating of 40 was found to be efficient under these conditions. Moderate variations, for example, increase in the degree of beating by 1, cause an increase in the specific gravity of approximately 0.006 and a reduction in the absorptive powers of the paper by approximately 0.200 millimeter. Microscopic characteristics of the paper were determined with the aid of photo-micrographs, the fiber length was established, the mutilation coefficient, (which is merely the quotient of the number of broken surfaces to the number of whole surface), the length of the piece of paper and the folding number. Folding the fiber at an obtuse angle is equivalent to 1, at a right angle to 2 and at an acute angle to 3.

As the digestion of the pulp progressed, the length of the fibers increased, inasmuch as the short fibers are also the weakest and most liable to be injured. The microscopic constants of a thick fibered, unbeaten stock are lesser tendency to become mutilated, greater length and lower folding number. These factors are changed in the reverse direction after beating. The thickest, longest and straightest fibers are least injured during beating. The more disintegrated and the weaker stock requires longer beating, although it possesses from its very nature a high degree of beating. In making comparative tests on various paper stocks, it is, of course, essential that they be treated alike in preliminary operations before they are beaten. Stock coming from various mills is very hard to compare as far as the final results on the papermaking machine are concerned, due to the different character of the mechanical treatment to which they have been subjected. The strength of a stock, which has been beaten and formed into paper, varies in accordance with the length of the fibers and the folding coefficient, but inversely with respect to the mutilation coefficient, that is the tendency for it to be injured.

The author finally concludes from his investigations that the strength of a pulp must not be determined in accordance to modern ideas on this problem by tearing off a piece from the paper web. It has been shown that the actual strength of the paper is rather inversely proportional to the manner in which it behaves when the sample is torn from the paper web. G. Porrvik, Svensk Papp. Tidn., volume 30, pages 12 ff, year 1927.

Producing Paper Pulp

UNITED STATES Patent No. 1,645,754 describes a process for digesting cellulosic material. This material is subjected to the action of a chemical liquor in a digester, which is shown at (3) in the accompanying illustration. The liquor is circulated by means of steam and the circulation is continuous and maintained so by bleeding steam from the digester. This steam is used to heat the first effect of an evaporator (22). The liquor, after it has accomplished the digestion of the stock, is passed through the evaporator and concentrated. (W. Howell, patentee.)



Pulp from Pinus Austriaca

THIS is a wood which is found in France in large quantities and which has recently been suggested as a source of wood pulp. Tests were carried out on the wood to determine the quantity and quality of pulp yield. One kilogram of the wood is treated with twenty per cent, thirty per cent and thirty-five per cent sodium caustic soda which is contained in four liters of the solution. The pressure maintained in the digester was two and one-half to three atmospheres. The duration of digestion in the first case was twelve hours,

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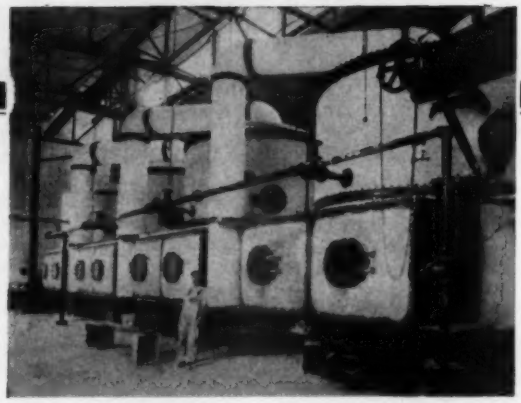

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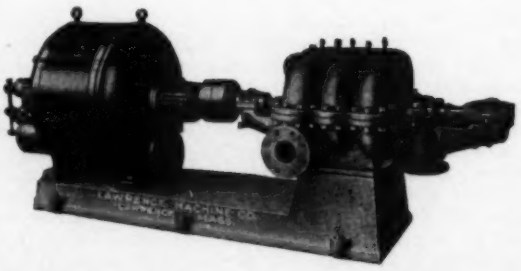

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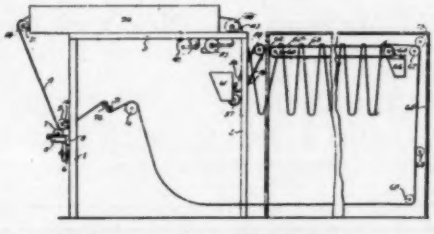
in the second case fifteen hours and in the third case fifteen hours likewise.

When the consumption of sodium hydroxide amounted to twenty per cent, the result was a hard, incompletely decomposed pulp at a yield of 65 per cent. The cellulose content of the wood amounted to 54 per cent. This pulp is not bleachable and can be used only in the manufacture of wrapping and packing papers. When the consumption of sodium hydroxide is thirty per cent, then a softer pulp but still unbleachable is obtained at a yield of 48 per cent. This pulp can be advantageously used in the manufacture of kraft and packing papers. The pulp that is obtained with a consumption of thirty-five per cent of sodium hydroxide is bleachable. A white pulp is accordingly obtained with a consumption of twenty-four per cent of chloride of lime. This pulp can be used in the manufacture of high grade papers. Caustic soda in the proportion of sixteen per cent and sodium sulphide in the proportion of eight per cent will yield a kraft pulp of good mechanical strength when the wood is digested with this liquor under 2.5 to three atmospheres pressure for a period of eight hours. L. Vidal and M. Aribert, Le Papier, volume 30, pages 731 ff, 1927.

Transparent Paper

HE trough, in which the solution of material used to form the sheet of paper is contained, is shown in the illustration. A feed roll dips into this solution. A belt is provided which has a surface from which the sheet may be



readily stripped when it is dry. This belt does not come into direct contact with the feed roll. Means are provided for raising and lowering the trough and also independent means for laterally moving the feed roll to adjust its position relative to an upper roll. United States Patent No. 1,650,585. (E. M. Kratz, patentee.)

Determining Wood Gum in Cellulose

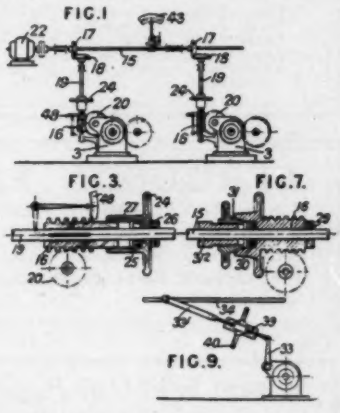
RELIABLE results on the proportion of wood gum in cellulose, which means that portion which is soluble in five per cent sodium hydroxide and precipitated on neutralization of the extract with acid, are only obtained if the cellulose is reduced to a fine state of division. A constant temperature must also be maintained during the extraction. If the extract is neutralized and precipitation is carried out with alcohol, the latter must not be diluted with water, since, for example, higher values are obtained when the precipitation is carried out with the aid of 96 per cent alcohol than with 88 per cent alcohol.

The extraction is complete within a period of one to two hours instead of two to three days, provided that the cellulose is in the form of wadding and the temperature is maintained constant at 15 degrees C. Furthermore, under these conditions, the laborious operations of collecting and weighing the precipitate are avoided, when an oxidation method is employed for the determination of the dissolved material.

Thus five grams of the cellulose are treated with one hundred cubic centimeters of a five per cent by volume sodium hydroxide solution at a temperature of 18 degrees C. for one to two hours. The mixture is filtered, and twenty-five cubic centimeters are withdrawn from the filtrate. The oxidation of this solution is then effected with the aid of 1.5 normal chromic acid which contains sulphuric acid. An aliquot portion of this reaction mixture, after suitable dilution, is titrated by the usual iodometric method: One cubic centimeter of the chromic acid solution corresponds to 10.13 milligrams of wood gum. The difference between the results given by this method and by the neutral precipitation method are indicative of the degree of bleaching of the material. Unbleached cellulose shows the highest values, highly-bleached cellulose the lowest and weakly-bleached cellulose intermediate values. H. Bubeck, Der Papierfabrikant, 1927, volume 25, pages 617-620.

Driving Paper Making Machines

IN PAPER machines comprising parts requiring to be driven at a constant speed such as stock chests, pulp strainers, pumps and shaking apparatus, and parts the speed of which must be variable, such as couch presses, wet presses, drying cylinders, calenders, reelers, etc., the driving shafts of the parts to be driven at variable speeds are each driven through separate speed gears (3), figure 1, each of which is adjustable by means of a hand wheel (24), secured against axial displacement by means of collars (25) and (26), figure 3, on a shaft (19).



The rotation of the hand wheel causes a threaded boss (27) to draw axially a worm (16) resulting in the rotation of a worm wheel (20) by which the speed ratio of the gear is changed. Each worm (16) is splined on its shaft (19) and when all the relative speeds of the details of the paper machine have been thus adjusted, the speed of the machine as a whole may be varied by rotation of a shaft (15), figure 1, which is coupled to the shafts (19) by means of bevel gears (17) and (18). The shaft may be rotated by a motor (22), which may be furnished with remote control, or it may be rotated by a hand wheel.

Indicators (43) and (48) are provided to show the respective mean speed of the machine as a whole, and the speed of the different details. The drive of the machine may be effected from a common shaft running at a constant speed, or separate motors may be provided for each unit. The worm (16) may be secured between collars (29) and (30), figure 7, on a shaft (15), but free to rotate on it. A sleeve (31^a) fixed to the shaft (15) has threaded on it a sleeve (31) which is used to lock the worm (16) on the shaft (15). The loosening of the sleeve (31) allows the worm (16) to be twined to set the gear which may then be locked to the shaft (15) by means of the sleeve (31). The gears may be provided with levers (33), figure 9, connected to a controlling rod (34) by a link (33^1), which comprises two parts coupled by a right and left threaded sleeves provided (39) provided with a handwheel (40). A. G. der Maschinenfabriken Escher Wyss, et Cie., British Patent No. 277,661.

South Africans to Manufacture Paper from Grass

The Engineer of London of Dec. 23, 1927, states that according to the South African Mining and Engineering Journal among the latest ventures to be talked of locally is a proposal to manufacture paper from the extremely tough and fibrous grass which grows in such profusion in the Transkai districts. Laboratory experiments have proved most encouraging, and steps are now being taken to establish the undertaking on a commercial basis. It is not, of course, the first time that a papermaking industry has been started in South Africa, but previous efforts have been more particularly directed to the manufacture of brown wrapping paper, and although a first-class material was produced, it unfortunately failed to achieve the commercial success that the enterprise and patient persistence shown by its promoters in face of numerous difficulties deserved.

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New York, January 3, 1928.

WITH the holiday season a matter of the past and paper mills and the innumerable consumers finishing their year-end inventory and getting back into the swing of business routine after the lapse which invariably occurs as the close of the year approaches, expectations are that the paper industry soon will be back in a busy position. Market prospects, it can be said with a certain degree of conservatism and weighing all of the factors at present in view, are quite favorable. There seems every reason to believe that demand for paper of various kinds will rule brisk over the next few months. Consumers have purposely let their stocks get down to a low level for the inventory period now drawing to a close, and there is, therefore, likely to be a great deal of buying to bring stocks back up to normal; jobbers also have been careful buyers from mills for some weeks past while preparing for the close of the year, and it is probable that considerable demand will develop from trade sources, while the general business outlook is such as to prompt one to anticipate an excellent consumption of paper during the early months of the new year and if this proves to be the case it is but a natural sequence that paper manufacturers will encounter relatively good demand for their product.

The new year opens, therefore, auspiciously for the paper industry. Contracting by large buyers and distributors has been on a big scale recently. In some parts of the trade it is said that consumers have committed themselves for by far larger tonnage of paper than at any time in the past, and this in itself is assurance enough that many paper mills will be kept well engaged during the early part of 1928. December is proverbially a period in the paper trade when manufacturers exert every effort to book orders, not alone contracts covering shipments well into the next year, but orders for current delivery in the month or two following, and there are plenty of evidences that mills secured a large volume of forward orders last month. Some went to the extreme of cutting prices slightly to induce customers to place committments, and, according to reports from reliable quarters, most paper mills have ample orders on file to insure active operations for at least a month or two.

Production of paper in the United States increased slightly during October as compared with the preceding month, according to the monthly statistical summary of the American Paper and Pulp Ass'n and affiliated organizations. During October, mills of the country produced a total of 571,404 net tons of paper of all kinds, against 567,060 tons produced in September, representing a gain of 0.8 per cent. The October production also compared with 591,593 tons produced in August last year, 513,459 tons in July, 560,342 tons in June, 543,592 tons in May, 558,412 tons in April, 596,448 tons in March, 525,896 tons in February, and 515,603 tons in January. The October output was the third largest in any month up to that point in 1927, being exceeded only by the April and August totals. The report shows that during October paper mills in the United States produced at an average of 81 per cent of normal capacity; that shipments from mills aggregated 577,745 tons, against 567,420 tons in the preceding month, and that mills had stocks amounting to 258,231 tons at the end of October, contrasted with 263,642 tons a month previously.

Production of newsprint recorded an increase in November over the October output, totaling 117,222 tons for United States mills and 190,293 tons for Canadian mills, a total of 307,515 tons for the two countries, compared with 305,846 tons in October. Shipments from mills aggregated 116,612 tons from U. S. mills and 187,766 tons from Canadian mills —a total of 304,378 tons—contrasted with 307,140 tons shipped in October, according to the News Print Service Bureau. During November, 17,829 tons of newsprint were made in Newfoundland and 1,029 tons in Mexico, so that the total North American production for the month amounted to 326,373 tons, against 323,970 tons in October. The Canadian mills produced a total of 1,900,699 tons of newsprint in the first eleven months of 1927, or 186,679 tons more than in the same period of 1926, which was an increase of 11 per cent. The United States mills produced a total of 1,367,595 tons for the eleven-month period, or 174,820 tons less than in the same time of 1926, a loss of 11 per cent; the Newfoundland production showed an increase of 16,007 tons or 9 per cent, and the Mexican output was 1,984 tons or 8 per cent more, making a total North American increase of 28,850 tons or one per cent. During November the Canadian newsprint mills operated at 86.1 per cent of rated capacity and the U. S. mills at 78.7 per cent. Stocks of newsprint at Canadian mills totaled 38,074 tons at the end of November, and at U. S. mills 28,543 tons, making a combined total of 66,617 tons, which was equivalent to 4.7 days' average production.

The output of boxboard in the United States during October reached a total of 227,149 tons of all grades, showing a little gain over the 225,633 tons produced in the preceding month, according to the monthly statistical summary of the paper board industry compiled and issued by the Department of Commerce in Washington. Orders for board received by mills in October called for a total of 221,548 tons, against 235,960 tons in September, and unfilled orders held by mills at the end of October were for 105,600 tons, compared with 120,331 tons a month earlier. Shipments of board from mills in October aggregated 228,222 tons, contrasted with 228,393 tons in the preceding month, and stocks of board at mills totaled 42,026 tons at the end of October, compared with 49,161 tons a month previously.

Contracting for newsprint has been on a fairly big scale, and the transient market displays much firmness. Book paper demand is moderate, and the market for kraft paper has been quite active. In certain instances manufacturers of book and kraft shaded prices lately to stimulate forward buying. Fine papers are experiencing seasonal quietness and not much change is reported in quotations. Specialties such as glassines, greaseproof and fancy cover papers enjoyed a splendid pre-holiday period but have now quieted down. Boxboard demand is moderate though buyers have been hesitant in the last few days, apparently waiting until after the turn of the year to make important purchases. Quotations are maintained. Reports tell of a better than usual demand at present for roofing felt, the recent reduction in quotations announced by manufacturers apparently having stimulated buying. Wall board and other building papers are rather slow.

Government to Acquire Tract in White Mountains

The National Forest Reservation Commission at a meeting held December 7th, authorized the purchase of 78,797 acres of land in the eastern United States at an average price of $16.62 per acre, and aggregating $1,312,434.50. This land contains a very large amount of highly valuable timber. The most important tracts were in the White Mountains of New England, aggregating 22,672 acres, which includes some of the most scenic areas in the southern portion of the White Mountains.

The government plans ultimately to resell 85 per cent of this timber. Fifteen per cent of the commercially mature timber will be held for seed trees and to grow to a larger size for quality stock. It is not planned to cut any timber upon four areas totaling 774 acres on account of their scenic value.

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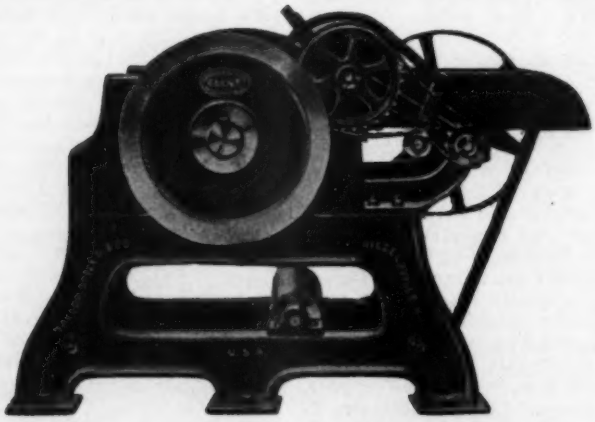

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Papermaking Rags

It is somewhat proverbial that December is a dull period for papermaking rags, and last month proved nothing of an exception to the general order of things. Paper manufacturers engaged in buying on a reserved scale while giving more attention to keeping stocks down for the year-end inventory than in augmenting their holdings, and while spotty business of some consequence was reported, the market in its entirety ruled decidedly quiet.

However, one branch of the market continued to display considerable life; namely, roofing rags. The demand for this class of papermaking rags kept up in much better volume and with a greater degree of consistency than is usually witnessed in the closing days of the year. It would appear as if the situation in roofing stock presents something for papermakers to be rather apprehensive over, insofar as the immediate future is concerned. Despite very limited buying of the better qualities of rags by paper mills for some time past, the relatively low prices prevailing on such rags, and the apparently plentiful supply available, the market for roofing stock exhibits a pronounced tone of firmness, and there seems every reason to believe the statements of dealers to the effect that present supplies of such rags are reaching the market in smaller tonnage than ordinarily is the case. This appears due to several major causes, one of which is that the relatively high prices obtaining in Europe on roofing rags has prompted consumers in this country to concentrate their buying recently on domestic stock, thus reducing available local supplies substantially and preventing any worthwhile accumulation in dealers' hands, and another is that consumers have purchased roofing rags in fairly large volume for some time. Thus, demand and supply have been working together to create a firm market condition.

There does not appear to be any danger of a shortage of roofing rags or any violent advance in market prices. On the other hand, it is quite likely market values will undergo some appreciation in the new year should demand from consuming quarters keep up in the volume recorded recently. And, it is probable that demand will continue good, judging from reports that roofing felt manufacturers have been booking business on a fair scale for delivery in the next several months. Should prices rise slightly, buyers likely will be able to secure sufficient supplies abroad at the moderate advance to prevent any serious elevation of market price levels.

Dealers report sales of No. 1 domestic roofing rags or cloth strippings at 2 cents per pound f. o. b. shipping points, and of No. 2 domestic packing at 1.50 cents. Perhaps these prices have been exceeded a bit in some cases, and it can be said that sellers in general are firm for the prices quoted. Foreign dark-colored cottons are scarcely available under 1.60 cents a pound ex dock New York and most importers ask a little above this price or about 1.65 cents.

The better grades of old cottons are still in a dull market position. Paper manufacturers seem little interested in buying, and there is scant doubt that purchases are being effected here and there at price concessions. New cuttings also are quiet. Occasional transactions are reported in certain grades, but the buying that is being done by paper mills currently is against urgent requirements only. Nevertheless, prices seem to be holding their level fairly well.

Dealers ask 6 cents and higher per pound at shipping points for No. 1 old repacked whites, and 2.50 to 3 cents for No. 2 repacked whites, depending on the quality of packing. Thirds and blues are quoted at 2.25 cents a pound in most cases at shipping points for repacked, and 1.75 cents for rough packing. Prices of old cotton batting have stiffened to where 4 cents a pound or close to this price usually is asked by dealers.

Fancy shirt cuttings have moved moderately freely at a price level of 5.75 to 6 cents a pound at dealers' shipping points, and quotations on No. 1 white shirt cuttings are maintained at 12 cents per pound in a majority of quarters. Blue overall cuttings are quoted at 6.75 to 7 cents a pound at shipping points, unbleached cuttings at 10 cents, O. D. khaki cuttings at 5.50 cents, light silesias at 7.75 cents, washables at 4.50 to 4.75 cents, and black silesias at 4.75 cents.

There has been limited trade activity in imported rags of all descriptions, yet quoted prices exhibit little change of importance.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	11.75-12.00
White shirt cuttings, No. 2	7.00- 8.00
Fancy shirt cuttings	5.75- 6.00
Washables, No. 1	4.50- 4.75
Unbleached muslin	9.75-10.00
White lawns	9.25- 9.50
Overall cuttings, blue	6.75- 7.00
Black silesias	4.75- 5.00
Light flannelettes	8.00- 8.25
Canton flannels, bleached	9.00- 9.25
Canton flannels, unbleached	8.00- 8.25
Shoe cuttings, bleached	8.50- 8.75
Shoe cuttings, unbleached	6.75- 7.00
Light silesias	7.50- 7.75
O. D. khaki cuttings	5.50- 5.75
Mixed khaki cuttings	5.00- 5.25
Corduroy cuttings	3.25- 3.50
Cottonade cuttings	3.25- 3.50
Linens, No. 1 white, foreign	13.00-14.00
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.00- 6.50
Whites, No. 2 repacked	2.50- 3.00
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.75- 6.00
Thirds and blues, rough	1.65- 1.75
Thirds and blues, repacked	2.15- 2.35
Black Stockings	3.75- 4.00
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	3.75- 4.00
Roofing, No. 1 (cloth strippings)	1.90- 2.00
Roofing No. 2	1.50- 1.60
Linsey, garments, foreign	1.80- 1.90
Dark colored cottons, foreign	1.60- 1.70
Blue linens, foreign	3.75- 4.00
Gray linens, foreign	4.00- 4.25
White linens, foreign	7.50- 8.00
Light prints, extra foreign	1.80- 2.00

Rope and Bagging

Seasonal dullness has prevailed in the markets for old rope and scrap bagging, and these materials are being absorbed by paper mills in frequent instances at recessions in price. Rope particularly is in a quiet market position. Notwithstanding the severe decline in market prices recently, consumers have kept mostly out of evidence as buyers, and there are indications that supplies are accumulating in dealers' establishments although it is stated by dealers that incoming supplies do not commence to measure up to normal. Domestic No. 1 old manila rope is reported selling at paper mills at 3.50 cents a pound at shipping points and probably at under this

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FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

price, while No. 1 foreign rope is bringing only in the vicinity of 3 to 3.25 cents per pound ex dock New York.

The principal life in the bagging market is a fair movement of roofing quality bagging. Felt mills are taking supplies in moderate volume and are reported paying 1.30 cents a pound to slightly higher at points of shipment. No. 1 scrap bagging is in spotty demand only and prices are comparatively close to those prevailing on roofing; in fact, dealers acknowledge it is difficult to induce paper mills to grant more than 1.60 or 1.65 cents a pound at shipping points for No. 1 bagging. Gunny bagging shows a declining price trend and is quoted at approximately 1.85 cents a pound f. o. b. shipping points for No. 1 domestic mill-run gunny.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.75-1.90
Gunny, No. 1 foreign	1.70-1.85
Scrap bagging, No. 1	1.60-1.70
Roofing bagging	1.30-1.35
Wool tares, heavy	2.25-2.50
Wool tares, light	2.00-2.25
Manila rope, No. 1 foreign	3.00-3.25
Manila rope, No. 1 domestic	3.50-3.75
Sisal strings	1.75-2.00
Mixed strings	.90-1.15

Old Paper

Some descriptions of old paper have continued in unusually good demand and firm in price over the dull holiday and inventory period, whereas other grades have been in exceedingly slow call and have literally tumbled in price as a result of a lack of consuming orders and pressure on the part of dealers to effect sales. Book stock and kraft papers are the outstanding grades in point of market activity and price steadiness. Mills have absorbed these grades freely, and not only have maintained their prices but in some instances have granted slight advances. Heavy No. 1 books and magazines are selling at 1.25 and 1.35 cents a pound f. o. b. shipping points, and No. 1 crumpled book stock at 1.15 cents per pound. Old No. 1 kraft of repacked variety is fetching 2.10 cents and higher a pound at dealers' points. The market appears well sold on these classes of stock, and dealers are exercising care in accepting mill orders owing to the difficulty they are experiencing in getting all the supply required to cover mill commitments.

Low grades have moved off in price to where No. 1 mixed paper has been sold in the East at 42½ cents a hundred pounds f. o. b. New York, and folded newspapers at 52½ cents New York. Probably some purchases have been made by board mills at a shade below these figures. Shavings are quoted at around 3 cents a pound at shipping points for No. 1 hard white, 2.75 cents for No. 2 hard white, and 2.70 cents for soft white shavings. More advantageous purchases are possible in some quarters, prices depending of course on the quality of packing. Dealers assert that the hold-off policy of consumers for some weeks past can only lead to a sudden revival of demand after the holidays and a consequent upward rush of market prices; at any rate, the opinion commonly existing in the trade is that the market will develop much strength early in the new year as it is believed board mills have sizable orders booked for their product and have permitted their stocks of waste paper to get down below a normally average level.

The following quotations are those named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.90-3.25
Hard white shavings, No. 2	2.65-2.85
Soft white shavings	2.60-2.90
Colored shavings	1.25-1.50
Heavy book, No. 1	1.25-1.35
Crumpled book, No. 1	1.10-1.20
Ledger stock	1.60-1.85
Kraft, No. 1.	2.00-2.25
New kraft cuttings	2.65-2.80
Manilas, No. 1	.75- .85

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Manufacture of

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C. K. Williams & Company, Easton, Pa., Emeryvilla, Cal., Malaga, Spain.
Georgia-Louisiana Company, East Point, Ga., Marrero, La.
Superior Pine Products Company, Fargo, Ga., Tarver, Ga.
Empire Size & Chemical Co., Albany, N. Y.
Adirondack Mineral Co., Carthage, N. Y.
Superior Sizing Company, Lockport, N. Y.
Paper Makers Importing Co., Easton, Pa., St. Austell, Cornwall, Eng.
Vera Chemical Co. of Canada, Ltd., Freeman, Ontario
Vera Chemical Corporation, Stoneham, Mass.
Vera Chemical Company, North Milwaukee, Wis.
John Regnier & Son Company, Boston, Mass.
George S. Mepham & Company, East St. Louis, Ill.
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Jenssen Acid Towers
Jenssen Spray Coolers
Bullard Gas Washer
Decker Cooking Process
Kamyr Feltless Wet Machine

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200 Fifth Ave., New York City

White blank news	1.55-1.65
Overissue news, No. 1	.65- .75
Folded news	.50- .65
Sulphite mill wrappings	.70- .80
Old corrugated boxes	.60- .65
New corrugated box cuttings	.80- .90
Mixed paper, No. 1	.40- .55
Common paper	.30- .40

Pulpwood

There is limited activity in the pulpwood market, according to reports from nearly all wood centers. Consumers apparently have their needs covered for a time and are engaging in fresh buying only on a small scale as new requirements arise. Quotations are fairly well maintained, mainly on the basis, according to producers, that market rates already are so low that further reductions are hardly possible.

Exports of pulpwood from Canada in November amounted to 48,685 cords, valued at $517,143, all of which came to the United States, compared with 84,465 cords of a value of $989,520 exported in the preceding month, and 66,282 cords of a value of $696,436 in November, 1926. During the 12 months ended last November the Dominion exported a total of 1,546,863 cords of pulpwood, valued at $15,942,440, contrasted with 1,387,963 cords of a value of $13,986,034 in the previous 12 months.

Mechanical Pulp

From a general standpoint, it is quite apparent that the market for mechanical ground wood is in a better condition than was the case several months ago, yet the situation has ruled decidedly quiet in recent weeks, due in large part to the holidays and the inventory period. Consumers have operated as buyers on a very reserved scale, seemingly being interested only in urgently-needed supplies. Nevertheless, there have been occasional sales of fair importance reported, and it appears as if the market gradually though surely is coming back into its own after a long period of depression and unprofitable prices.

Grinders in Canada usually quote about $25 a ton f. o. b. pulp mills for prime spruce ground wood for prompt shipment, and while some purchasing likely is being accomplished at slightly under this price level, it is noted that producers are becoming firmer in their demands for the figure named. Domestic ground wood is nominal in price at about $26 or $27 a ton at shipping points, and imported ground wood of prime grade and of Scandinavian origin is reported bringing $28 to $30 per short ton ex dock Atlantic seaboard for dry pulp and probably a trifle higher in some cases.

Production of ground wood in the United States in October last amounted to 78,759 tons, against 63,486 tons in the preceding month. Mill stocks at the end of October were 95,384 tons, compared with 102,528 tons a month earlier. These figures show that despite an appreciable gain in output in October over the September production, mill stocks decreased substantially during October, thus indicating an improving statistical condition.

Chemical Pulp

Demand for domestic chemical wood pulp has ruled rather narrow in recent weeks, yet the market has displayed fair activity in some quarters and it would appear as if, everything considered, consumers are absorbing supplies moderately well for this period of the year. It is apparent that most buyers are operating cautiously, and are bent mostly on filling actual requirements, but on the other hand, reports tell of those mills producing pulp for sale in the open market being fairly well engaged and this would seem to indicate they are securing orders for good-sized tonnage.

Prices are holding their own, although it is likely that most transactions are at the low edge of quotational ranges, which means that the price condition is rather in favor of buyers. Leading producers continue to quote bleached sulphite of prime quality at 4 cents a pound f. o. b. pulp mills, and extra grades at 4.50 and 4.75 cents. There have been sales reported, however, at less than 4 cents. Strong sulphite of news grade is quoted at around 2.50 cents at pulp plants, and book grade sulphite at 2.80 cents or thereabouts. No. 1 domestic kraft

a baker's dozen

The papers in which silicate of soda is used are numerous. For convenience, we'll name a baker's dozen:

Kraft	Wrapping	Bristol
Writing	Book	Container Board
Glassine	Offset	Magazine
Tissue	Cover	Manila

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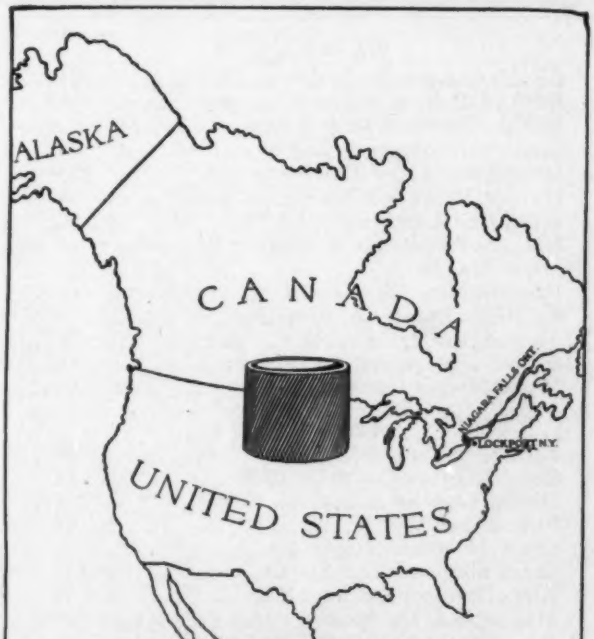

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American Sales Book Co. 6s, 1939	@	102½
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British Columbia Pulp & Paper Co. 6s.	@	87
Continental Paper & Bag 6½s, 1944	@	83
Donnacona Paper Co. Preferred	@	103
Hoberg Paper & Fibre Co. 7s, 1937	@	94
Long Bell Lumber Co. 6s, 1931	@	90
Niagara Alkaili Co. & Electric Bleaching Gas Co. 7s.	@	100
Pacific States Lumber Co. 8s.	@	OW
St. Regis Paper Co. Preferred	@	104
Stetson Cutler 7s, 1942	@	102¾
United Paperboard Co. Preferred	@	63
Watab Paper Co. 6½s, 1942	@	102¾

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Brompton Pulp & Paper 6s, 1946	@	102½
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Dierks Lumber & Coal 6s, 1946	@	101½
Filer Fiber Co. 7s	@	94
Great Northern Paper Co.	@	68
Great Southern Lumber Co.	@	123
Kirby Lumber Co. 6s, 1938	@	99
Marinette & Menominee Paper Co. 7½s	@	104½
New England Lime Co. Preferred	@	98
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Writing—	
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White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
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White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
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No. 1 S. & S. C.	6.25- 8.00
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Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.65- 3.80
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .80
No. 1 manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	6.00- 6.50
No. 2 kraft	5.25- 5.50
Southern kraft	4.25- 4.75
Boards—	New York and Chicago
Solid news	52.50-57.50
Straw	52.50-57.50
Plain chip	42.50-45.00
White coated chip	50.00-55.00
Manila coated chip	55.00-60.00
Binder's board	70.00-75.00

Chemical Pulp

(*Continued from page 1767*)

pulp is quoted at 2.75 to 3 cents per pound, and bleached soda pulp at 3.25 cents f. o. b. producing points.

Mills in the United States produced a total of 107,763 net tons of chemical pulp of all grades in October last, against 105,019 tons in September, according to the American Paper and Pulp Association. Stocks at producing mills at the end of October aggregated 19,616 tons, contrasted with 19,255 tons a month previously.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	3.75-4.75
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1 strong (news grade)	2.40-2.70
Unbleached sulphite, No. 1 book	2.70-3.00
Soda pulp, bleached	3.25-3.50
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

Chemicals

There has been fair activity in papermaking chemicals recently, mostly in connection with consumers contracting for 1928 supplies, and quotations have been maintained with little change of consequence. Casein prices have stiffened somewhat to where domestic producers generally ask at least 18 cents per pound for carlot quantities, in bags. Caustic soda is steady in price at 3 to 3.10 cents a pound for spot delivery ex works, and soda ash is quoted firmly at 1.32½ cents per pound for shipments in bags at producing points.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75
Alum, lump starch	3.75 - 4.00
Blanc fixe, powder	4.00 - 4.25
Bleaching powder	2.00 - 2.35
Brimstone (long ton, at mine)	18.00 -19.00
Casein (duty paid)	17.50 -18.50
Caustic soda, spot delivery	3.00 - 3.10
China clay, domestic washed	8.00 -10.00
China clay, foreign	14.00 -20.00
Rosin, Grade E	8.80 - 8.85
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½-.....
Starch, papermakers', in bags	3.07 -.....
Talc (ton)	16.00 -18.00

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities when we will endeavor to furnish actual markets.

BONDS	BID	ASKED
Abitibi Fibre Co. 6s, 1947	100¼	
Abitibi Power & Paper 6s, 1921	101	102
Abitibi Power & Paper 6s, 1940	104¾	
Advance Bag & Paper 7s, 1943	104½	105¼
American Sales Book Co. 6s, 1939	102½	
American Writing Paper 6s, 1947	94	
American Writing Paper 6s, 1939	78	82
American Book 6s, 1928	100	101
Bastrop Pulp & Paper Co. 6½s, 1940	101¼	
Belgo Canadian Paper 6s, 1943	102¼	103
British Columbia Pulp & Paper 6s, 1950	87	
Brompton Pulp & Paper 6s, 1935	101½	
Brompton Pulp & Paper 6s, 1946	101	
Brown Paper Mills 6s, 1935-41		100
Bedford Pulp & Paper 6½s, 1942	98	100
Beaver Products 7½s	109	
Canadian Paper Co. 6s, 1938	99½	
Canadian Paperboard 7s, 1937	98½	100½
Cape Breton Pulp & Paper 6s, 1932	101	103
Celotex Co. 6½s, 1939	101½	103
Central Paper 6½s, 1941	85	
Central Paper 6½s, 1942	85	
Central Paper 6½s, 1930	86	
Central Paper 7s, 1932-33	87	90
Celotex Co. 6s, 1929	100	103
Celotex Co. 6s, 1936	97½	
Champion Fibre Co. 6s, 1941	100½	101¼
Champion Paper 6s, 1935	95	
Champion Coated Paper 6s	100	
Container Corp. of America 6s, 1936	101½	
Continental Paper Products 6½s, 1942	89	92
Dells Paper & Pulp 6s	95	
Donnacona Paper 6s, 1940	103¼	
Eastern Mfg. Co. 7s, 1938	89	90
Eddy Paper Co. 7½s, 1931	103½	
Escanaba Paper 6s, 1939	96	98
Escanaba Paper 5s, 1928	99	101
Filer Fibre 7s	87	92
Fort William Paper Co. 6s, 1946	99½	101½
Frazier Co. 6s, 1950	100	101
Gair (Robt.) 5½s, 1942	97	
Gilbert Paper Co. 6½s	90	
Howard Smith Paper 7s, 1941	104	105
Hartje Paper Co. 6s	1½	

(*Continued on page 1777*)

The B Co. Inc. QUALITY PULPS

HAFSLUND NORWAY — "HAFSLUND BEAR" Bleached Sulphite

F:HAGA — "FORSHAGA" Bleached Sulphite

KRAFT HURUM NORWAY SPECIAL — "HURUM SPECIAL" Extra Strong Kraft

KOOS BAC — "BAMBLE" Extra Strong Kraft

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Kraft Pulp 50 tons daily

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EXPORTS

Exports of paper from the United States recorded an appreciable increase in October in point of value over the shipments in the preceding month, and also a gain over the exports in the corresponding month of 1926, according to official figures compiled and issued by the U. S. Department of Commerce in Washington. During October last, total exportations of paper of all kinds from this country amounted in value to $2,281,757, contrasted with $1,942,729 in September last year, and $2,204,989 in October, 1926. During the first ten months of 1927 exports of paper from this country reached a total declared value of $22,368,004, against $22,385,006 in the similar period of last year.

Exports of newsprint in October were 1,478,206 pounds, valued at $76,870, against 1,407,854 pounds of a value of $68,190 in the preceding month and 2,805,098 pounds of a value of $131,454 in October a year ago. Exports in the first ten months of 1927 were much smaller than in 1926, totaling 22,058,421 pounds, against 34,202,334 pounds in the same time of 1926. Newsprint exports in October last were principally to the Philippine Islands, 652,812 pounds; Canada, 295,186 pounds, and South America, 103,339 pounds. Exports of book paper, not coated, from the United States in October amounted to 1,315,767 pounds, valued at $113,231, contrasted with 1,832,235 pounds of a value of $163,064 in October, 1926.

Exports of hanging paper from the U. S. in October scored a big increase compared with the preceding year's shipments, totaling 4,065,433 yards of a value of $65,151 last October, against 1,229,828 yards of a value of $41,869 in October, 1926. On the other hand, exports of wrapping paper declined from 3,549,723 pounds of a value of $196,395 in October, 1926, to 3,050,531 pounds of a value of $226,626 in October last. Shipments of box board amounted to 3,340,157 pounds of a value of $98,690 last October, compared with 4,163,485 pounds of a value of $120,081 in the same month of 1926. Writing paper exports last October were 960,813 pounds, valued at $132,613, against 615,844 pounds of a value of $102,764 in the previous October.

IMPORTS

Wood Pulp

Probably the most important development in the foreign wood pulp situation is the report that Swedish manufacturers of pulp and paper have declared a lockout in their mills, effective January 2 unless an agreement is reached with their employees prior to that date. This announcement was received on December 23, or just before the shutdown in the Swedish industry for the holiday period, and it was stated that the pulp mills in that country would not open on January 2 following the holidays unless the manufacturers and their workers came to an agreement concerning wages, etc. It is understood that the mill owners have announced a reduction in wages, and that the employees refuse to accept the cut which the manufacturers propose. Should a strike occur in the Swedish pulp mills and production of pulp in Sweden be stopped for any appreciable length of time, there is no doubt that the influence on the pulp market here would be of prime importance. American paper manufacturers have contracted for sizable quantities of Swedish sulphite and kraft pulps for shipment over the next few months, and if they fail to secure these supplies there would likely be a rush to buy from other sources, and market prices in all likelihood would advance sharply. Everything depends on how long the strike lasts; there is at present ample pulp, and perhaps some surplus, in the market, and it would require time to reduce stocks to a point where the stoppage of production in Sweden would be felt, but a long-drawn-out strike in the Swedish mills would eventually affect the market to a very material degree.

Generally, buying of chemical wood pulp has been rather narrow recently. Most paper and board manufacturers have pursued a waiting policy as regards purchases, having covered the bulk of their expected requirements over the next several months. However, reports have told of fair demand arising from some consuming quarters, and, everything considered, the market has been comparatively active in some instances. The price tone is steady, and tending to stiffen. Everyone in the trade expresses the belief that market levels have touched bottom, and there are some on the consuming side who are frank to admit they do not expect to witness any lower pulp prices in the near future. Markets abroad have ruled fairly firm, and reports assert that most producing mills in Scandinavia and elsewhere in Europe are well sold up for over the winter and in some cases well into 1928.

Importations of chemical wood pulp into the United States in October were large, according to official figures issued by the U. S. Department of Commerce, amounting to 120,742 long tons of chemical pulp of all kinds, valued at $7,342,145, contrasted with 107,244 tons of a value of $6,498,141 imported in the preceding month, and 109,297 tons of a value of $7,061,880 in October, 1926. October receipts, in fact, were the second largest in any month during 1927 up to that point in the year, being exceeded only by the imports in January last. The October arrivals brought the total for the first ten months of 1927 up to 1,020,534 tons, giving a monthly average of 102,053 tons, compared with an average of 103,736 tons monthly in the corresponding period of 1926. Ground wood imports in October were 18,920 long tons, valued at $507,690, contrasted with 25,347 tons of a value of $627,024 imported in the preceding month, and 34,931 tons of a value of $1,064,638 in October, 1926. The ten-month imports of ground wood last year amounted to 171,710 tons, of a value of $4,787,038, against 227,424 tons of a value of $6,980,059 in the first ten months of 1926.

Quotations on imported strong unbleached sulphite range around 2.50 cents per pound ex dock American Atlantic ports, with some grades reported available down to 2.40 and 2.45 cents and with the better qualities priced at 2.60 cents and higher. Easy bleaching sulphite of prime grade is quoted at around 2.80 cents on the dock, and ordinary Mitscherlich unbleached sulphite at 2.40 cents. Bleached sulphite is on a wide quotational range, from a low of about 3.40 cents per pound ex dock up to 4 cents and more for some mill brands, depending of course on the quality of the pulp concerned. Prime Swedish kraft pulp is quoted at 2.65 to 2.70 cents a pound ex dock. Prime dry ground wood of Scandinavian origin is reported selling at $28 to $30 a short ton on the dock at New York.

Current market quotations ex dock New York and receipts at the port of New York during December follow:

Bleached sulphite, No. 1	3.40– 4.00
Unbleached sulphite, strong No. 1	2.40– 2.70
Unbleached sulphite, No. 2	2.35– 2.50
Easy bleaching sulphite	2.75– 2.90
Mitscherlich unbleached, genuine	2.90– 3.15
Mitscherlich unbleached, ordinary	2.40– 2.60
Kraft, standard Swedish	2.65– 2.80
Ground wood, per ton (dry)	28.00–30.00

Johaneson, Wales & Sparre, 250 bls. from Gefle, 5,700 Hernosand, 500 Gothenburg and 1,325 Sundsvall; Bulkley, Dunton & Co., 5,000 bls.

The Pulp and Paper Trading Co.

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Dealers in
Domestic Chemical and Mechanical Pulps and Paper

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1,000,000,000

In 38 years of design and manufacture of water filters and softeners, Hungerford & Terry have installed an aggregate daily capacity of more than one billion gallons.

This experience has enabled them to aid paper and other manufacturers to improve their products and reduce their costs of production by the proper treatment of that important material—water.

Is your water supply properly protected to insure highly efficient mill operation and the highest quality in your product? Hungerford & Terry Engineers will investigate your conditions and report to you fully without obligation.

HUNGERFORD & TERRY
INC.
CLAYTON, N. J.

MITTS & MERRILL SHEET STOCK SHREDDER

Giving the Beater a Lift

The operation of a beater, with its wear and tear and tremendous power consumption, has one primary purpose, namely, hydration. Any thing that will economically bring about hydration more quickly relieves the beater just that much, cuts down on operating costs and speeds the process of paper making.

The MITTS & MERRILL SHEET & LAP STOCK SHREDDER performs on magazines, books, old paper and boxboard, frozen or dried pulp laps in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

Our Shredders are built in sizes with spouts ranging from 18″ to 45″ wide. We will be glad to quote you on any size adapted to your requirements.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 378 and 379 in the Paper and Pulp Mill Catalogue

MITTS & MERRILL 1013 Tilden St. **SAGINAW, MICH.**

from Gefle, 490 Trieste, 125 Hamburg, 3,050 Stugsund, 875 Iggesund and 800 Sundsvall; Pagel, Horton & Co., 10,100 bls. from Gefle; Scandinavian Pulp Agency, 695 bls. from Gefle; J. Anderson & Co., 657 bls. from Hamburg, 2 Oslo, 3,000 Hernosand and 500 Stugsund; Castle & Overton, 7,837 bls. from Hamburg and 219 Rotterdam; M. Gottesman & Co., 2,680 bls. from Rotterdam, 1,000 Iggesund and 900 Kotka; E. J. Keller Co., 1,500 bls. from Rotterdam and 600 Antwerp; Price & Pierce, 1,625 bls. from Gothenburg and 600 Stugsund; E. M. Sergeant Co., 2,295 bls. from Gothenburg; American Exchange Irving Trust Co., 490 bls. from Trieste, 200 Hamburg and 1,500 Hernosand; Atterbury Bros., 2,250 bls. from Oslo; Perkins-Goodwin Co., 125 bls. from Oslo; Chemical National Bank, 1,080 bls. from Oslo; First National Bank of Boston, 2,400 bls. from Oslo; International Acceptance Bank, 160 bls. from Oslo; Parsons & Whittemore, 120 bls. from Gothenburg; Buck, Klaer & Co., 1,200 bls. from Stockholm; Order, 775 bls. from Borga, 3,322 Hamburg, 2,257 Bremen and 4,254 Kotka.

Paper Stock

Imports of papermaking rags, as well as of other classes of paper stock, into the United States continued on a comparatively small scale during December, judging from arrivals through the port of New York last month. There were some fair-sized shipments of old bagging received, and routine receipts of rags, waste paper, old rope and other materials, but aggregate imports were rather below an average.

Papermaking rag imports into this country in the first ten months of 1927 amounted to 311,956,745 pounds, valued at $6,308,775, showing a sharp decline as compared with the 401,071,656 pounds of a value of $8,823,121 imported in the similar period of 1926. Imports of waste bagging, waste paper, etc., in the same period totaled 87,359,889 pounds, against 96,088,559 pounds in the first ten months of 1926, and imports of old rope and miscellaneous paper stock were 53,509,740 pounds, contrasted with 69,185,751 pounds in 1926.

Imports of all kinds of paper stock other than wood pulp at New York in December, 1927, these data being taken from manifests of steamers reaching that port during the month, follow:

Old Rope—Brown Bros. & Co., 479 bls. and 566 coils; N. E. Berzen, 322 coils; Ellerman's Wilson Line, 324 coils; United Fruit Co., 6 bls.; William Steck & Co., 31 bls.; H. J. Reed, 68 bls.; S. Birkenstein & Sons, 23 coils; Bulkley, Dunton & Co., 39 bls.; E. J. Keller Co., 179 bls.; Order, 257 coils and 40 bls.

Old Bagging—Katzenstein & Keene, 146 bls.; British Bank of South America, 82 bls.; Bank of the Manhattan Co., 159 bls.; Salomon Bros. & Co., 75 bls.; American Exchange Irving Trust Co., 156 bls.; A. W. Fenton, Inc., 64 bls.; Chase National Bank, 43 bls.; Alfred Bloch & Co., 109 bls.; Robert Blank, 259 bls.; Melrose Paper Stock Co., 143 bls.; National Bank of Commerce, 151 bls.; Goldman, Sachs & Co., 182 bls.; Bank of New York & Trust Co., 107 bls.; E. Vermesse, 205 bls.; National City Bank, 198 bls.; Bulkley, Dunton & Co., 260 bls.; E. J. Keller Co., 1,385 bls.; Order, 442 bls.

Rags—Robert Blank, 176 bls.; E. J. Keller Co., 756 bls.; Victor Galaup, Inc., 742 bls.; Daniel M. Hicks, Inc., 25 bls.; Paul Berlowitz, 24 bls.; E. Butterworth & Co., 411 bls.; R. Canovai & Sons, 264 bls.; J. Cohen & Son Co., 161 bls.; Giatti Bros., 50 bls.; M. Cotton, 24 bls.; Jaffe Products Co., 55 bls.; Castle & Overton, 40 bls.; David Galloway Co., 75 bls.; Daniel I. Murphy, Inc., 50 bls.; Darmstadt, Scott & Courtney, 15 bls.; H. Burrows, 2 bls.; Salomon Bros. & Co., 131 bls.; Alexander H. Searle, Inc., 60 bls.; S. Birkenstein & Sons, 21 bls.; American Exchange Irving Trust Co., 212 bls.; Central National Bank, 13 bls.; Equitable Trust Co., 937 bls.; Chemical National Bank, 42 bls.; Banco di Roma, 67 bls.; Bowery and East River National Bank, 12 bls.; Corn Exchange Bank, 92 bls.; Chase National Bank, 5 bls.; Hanover National Bank, 13 bls.; Bank of America, 195 bls.; Banca Commerciale Italiano Trust Co., 15 bls.; Anglo-South American Trust Co., 486 bls.; Goldman, Sachs & Co., 266 bls.; C. B. Richard & Co., 184 bls.; C. R. Spence & Co., 159 bls.; International Mercantile Marine Co., 14 bls.; Kidder Peabody Acceptance Corp., 455 bls.; Brown Bros. & Co., 221 bls.; American Overocean Corp., 300 bls.; Grace Bros., 194 bls.; A. W. Fenton, Inc., 422 bls.; U. S. Forwarding Co., 36 bls.; Order, 1,316 bls.

Miscellaneous Paper Stock—Daniel M. Hicks, Inc., 327 bls.; T. D. Downing & Co., 50 bls.; Bank of the Manhattan Co., 96 bls.; Brown Bros. & Co., 101 bls.; A. W. Fenton, Inc., 87 bls.; Chase National Bank, 511 bls.; Equitable Trust Co., 167 bls.; Goschens & Cunliffe, 219 bls.; Bank of New York & Trust Co., 384 bls.; American Wool Stock Co., 37 bls.; E. Butterworth & Co., 496 bls.; Fidelity International Trust Co., 54 bls.; S. Birkenstein & Sons, 517 bls.; Philadelphia Girard National Bank, 130 bls.; Castle & Overton, 564 bls.; Salomon Bros. & Co., 56 bls.; Darmstadt, Scott & Courtney, 352 bls.; Kidder Peabody Acceptance Corp., 210 bls.; Royal Mfg. Co., 46 bls.; J. Cohen & Son Co., 44 bls.; Alexander H. Searle, Inc., 121 bls.; Robert Bishop Mfg. Co., 88 bls.; Katzenstein & Keene, 58 bls.; Milton Snedeker Corp., 166 bls.; Union Waste Co., 24 bls.; Melrose Paper Stock Co., 122 bls.; E. J. Keller Co., 225 bls.; American Exchange Irving Trust Co., 324 bls.; Guaranty Trust Co., 11 bls.; Chemical National Bank, 58 bls.; Banca Commerciale Italiano Trust Co., 377 bls.; C. B. Richard & Co., 190 bls.; R. F. Downing & Co., 73 bls.; Corn Exchange Bank, 34 bls.; Baring Bros. & Co., 84 bls.; Bulkley, Dunton & Co., 143 bls.; Order, 1,518 bls.

Paper

Imports of finished paper into the United States recorded a gain in value in October 1927, as compared with the preceding month and also showed a gain over the importations in October, 1926, according to official statistics compiled and issued by the U. S. Department of Commerce. During October last paper imports were valued at a total of $13,051,890,

One Job Sells Others

That's Why there are more Dayton High Speed Beaters in the mills of America and Canada than all other builders of high speed equipment combined can account for.

That's Why approximately 80% of the nearly 400 Daytons now in use represent repeat business.

That's Why mills that install one on trial today find it advisable to add more Dayton units tomorrow.

That's Also the Reason Why— YOU should consider Dayton High Speed Equipment for your beater room — nor should there be a reason in the world for undue delay.

Entirely new equipment or old units reconstructed

Get the facts—write

The Dayton Beater & Hoist Co.

Dayton, Ohio

EASTERN REPRESENTATIVES:

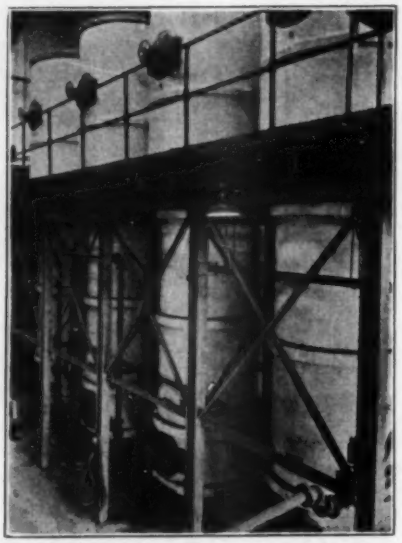
E. K. Mansfield Co., 501 5th Ave., New York, N. Y.

DAYTON

High Speed Beaters

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
NORTHWEST
PAPER CO.
Cloquet, Minn.



NON-FOAMING

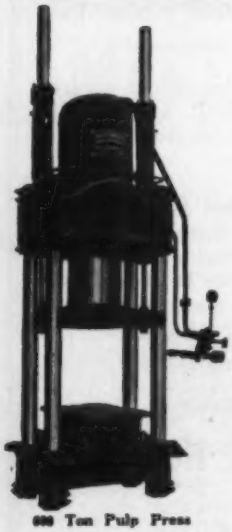
MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1926 Paper and Pulp Mill Catalogue



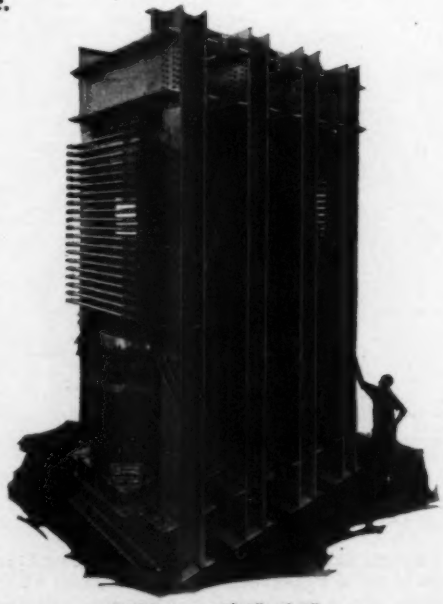
600 Ton Pulp Press

SOUTHWARK

Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.

PULP PRESSES
BALING PRESSES
WALL BOARD PRESSES
PULP TRUCKS
HYDRAULIC PUMPS
ACCUMULATORS
VALVES, FITTINGS, ETC.

Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



2000-ton 12'-6"x4'-6"
20 Opening Wall Board Press

SOUTHWARK FOUNDRY and MACHINE CO.

400 WASHINGTON AVENUE
PHILADELPHIA, PA.

CHICAGO
343 S. DEARBORN ST.

AKRON
100 E. SOUTH ST.

against $12,566,617 in September last, and $12,915,713 in October, 1926. During the first ten months of 1927 imports of paper into this country were valued at a total of $121,866,959, contrasted with $114,181,986 in the similar time of 1926.

Paper imports in December were fairly heavy, judging from unofficial figures covering arrivals at the port of New York last month. Some sizable amounts of printing and wrapping paper were imported, and customary receipts of cigarette, filter, hanging and other grades were noted. Imports of paper of all kinds at the port of New York in December, 1927, these data being taken from manifests of steamers arriving at that port during the month, follow:

Printing—B. F. Drakenfeld & Co., 89 cs. from Liverpool; National City Bank, 225 rolls from Gefle; Perkins-Goodwin Co., 778 reels from Bremen and 32 reels from Hamburg; A. S. Zabriskie, Inc., 70 reels from Bremen; Lloyd Royal Belge, 41 cs. from Antwerp; International Forwarding Co., 10 cs. from Antwerp; F. Henjes, Jr., 62 reels from Hamburg; Guaranty Trust Co., 92 reels from Hamburg; Dingelstedt & Co., 5 cs. from Hamburg; C. Bruning & Co., 93 rolls from Rotterdam; E. Dietzgen & Co., 148 cs. from Rotterdam and 125 cs. from Hamburg; C. Steiner, 89 cs. from Rotterdam; Heemsoth & Basse, 81 pkgs. from Rotterdam; Burroughs, Wellcome & Co., 8 cs. from London; Walker, Goulard, Plehn Co., 16 cs. from Trieste, 2 bls. Hamburg and 20 cs. Oslo; H. Reeve Angel & Co., 50 reels from Oslo and 52 bls. Gothenburg; Bank of Montreal, 3,444 rolls from Cornerbrook; P. Puttmann, 28 cs. from Havre; P. C. Zuhlke, 8 cs. from Rotterdam and 71 cs. Antwerp; C. A. Redden, 7 reels from London; New Haven Times-Union, 103 reels from Gothenburg; Hudson Trading Co., 108 reels from Gothenburg and 130 rolls Sundsvall; M. Gottesman & Co., 280 reels from Gothenburg; Ossian Ray, 77 reels and 17 bls. from Gothenburg; Order, 143 bls. and 560 reels from Bremen and 1,189 cs. from Hamburg.

Wrapping—Rowac Corp., 38 cs. from Antwerp; Birn & Wachenheim, 20 cs. from Antwerp; Robrt Wilson Paper Corp., 26 bls. from Rotterdam; Guaranty Trust Co., 34 bls. and 151 cs. from Hamburg; D. S. Walton & Co., 106 rolls from Hamburg; M. M. Cohen, 94 bls. and 114 reels from Gothenburg; Manhattan Paper Co., 433 bls. and 34 reels from Gothenburg; C. K. MacAlpine & Co., 162 bls. and 89 reels from Gothanburg; Arkell Safety Bag Co., 656 rolls and 273 bls. from Gothanburg; Goldsmith & Co., 156 bls. from Gothenburg; Insight Paper Co., 327 reels from Oslo; F. Henjes, Jr., Inc., 10 cs. from Bremen and 62 rolls from Hamburg; F. C. Strype, 19 pkgs. from Antwerp; J. P. Heffernan Paper Co., 213 bdls. from Hamburg; Globe Shipping Co., 103 rolls and 8 bls. from Hamburg; Wilkinson Bros. & Co., 1,006 rolls from Hamburg and 96 reels and 46 bls. from Gothanburg; Thomas Barrett & Son, 167 bls. from Gothenburg; Borregaard Co., 1,575 reels and 74 bls. from Gothenburg; Gilbert Paper Co., 204 bls. and 176 rolls from Gothanburg; Crepe Kraft Co., 141 rolls from Gothanburg; Southern Pacific Co., 200 rolls from Genoa; Consumers Paper Corp., 4 bls. from Rotterdam; Order, 30 bls. and cs. from Hamburg and 1,853 bls. and 20 rolls from Antwerp.

Cigarette—American Tobacco Co., 1,000 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 400 cs. from Havre and 1,815 cs. from St. Nazaire; DeManduit Paper Corp., 484 cs. from Havre and 512 cs. from St. Nazaire; Standard Products Corp., 326 cs. from Havre; British-American Tobacco Co., 56 cs. from Liverpool and 43 cs. from Havre; P. J. Schweitzer, Inc., 45 cs. from Havre and 257 cs. from Marseilles; P. Lorillard Co., 42 cs. from Marseilles; Southern Pacific Co., 3 cs. from Havre; Surbrug Co., 20 cs. from Havre.

Writing—R. H. Stearn & Co., 3 cs. from Havre; Bank of the United States, 2 cs. from Havre; Lachroys Paper Co., 2 cs. from Southampton; W. J. Byrnes & Co., 2 cs. from Southampton; Guibont Freres & Co., 12 cs. from Southampton and 2 cs. from Havre.

Filter—E. Fougera & Co., 104 cs. from Southampton; H. Reeve Angel & Co., 66 cs. from Southampton and 34 cs. London; C. Sleicher & Scholl Co., 13 cs. from Hamburg; A. Giese & Son, 5 pkgs. from Hamburg and 30 pkgs. Southampton.

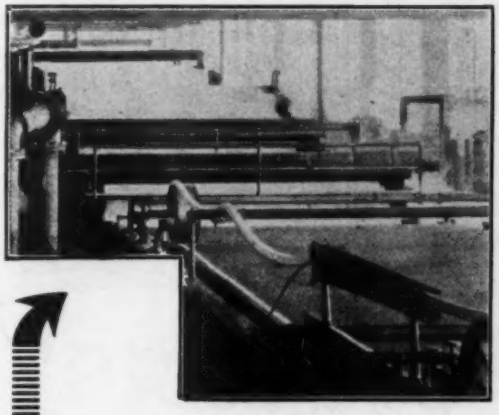
Drawing—Keuffel & Esser Co., 18 cs. from Rotterdam, 4 cs. Southampton and 148 rolls and 91 cs. Hamburg; H. Reeve Angel & Co., 4 cs. from London; International Forwarding Co., 2 cs. from London; Steffen, Jones & Co., 20 cs. from Rotterdam.

Tissue—Schenkers, Inc., 334 cs. from Hamburg; F. B. Vendegrift & Co., 18 cs. from Liverpool; G. W. Sheldon & Co., 3 cs. from London.

Hanging—A. C. Dodman Jr. & Co., 264 bls. from Liverpool, 11 cs. Havre and 69 pkgs. Southampton; F. J. Emmerich & Co., 91 bls. from Liverpool, 116 bls. Hamburg, 24 bls. London and 4 cs. Havre; R. F. Downing & Co., 94 pkgs. from London; C. A. Haynes & Co., 153 pkgs. from London and 56 bls. Liverpool; W. H. S. Lloyd & Co., 7 bls. from Liverpool; F. & R. Trading Co., 102 bls. from Antwerp; J. E. Bernard & Co., 20 bls. from Antwerp; A. C. Rempert & Co., 19 bls. from London; F. Blank & Co., 27 cs. from Hamburg; Remien & Kuehnert Co., 6 cs. from Hamburg; Meadows, Wye & Co., 2 cs. from London; G. H. Nelson Paint Co., 2 cs. from Hamburg; Stern, Stiner & Co., 7 pkgs. from Hamburg; Globe Shipping Co., 59 bls. from Hamburg; Alfred Peats & Co., 2 cs. from Hamburg; W. P. Nelson & Co., 2 cs. from Bremen; Order, 2 cs. from Liverpool.

Photo—Globe Shipping Co., 440 cs. from Bremen and 71 cs. Rotterdam; P. C. Zuhlke, 337 cs. from Antwerp; American Express Co., 91 cs. from Antwerp; Gevaert Co. of America, 239 cs. from Antwerp; J. J. Gavin & Co., 7 cs. from Liverpool; Order, 15 cs. from Hamburg.

Board—Haas Bros., 682 reels from Rotterdam; Adrian Vuyck, 4,904 reels from Rotterdam; Perkins-Goodwin Co., 794 reels from Rotterdam; State Bank, 251 reels from Rotterdam; National City Bank, 171 reels from Rotterdam; Robert Wilson Paper Corp., 312 reels from Rotterdam; J. P. Heffernan Paper Co., 615 reels from Rotterdam; Chatham & Phenix National Bank, 22 bls. from Gothenburg; Wilkinson Bros. & Co., 42 rolls from Gothenburg; Coty, Inc., 96 cs. from Havre; Lagerloef Trading Co., 227 bls. and 20 reels from Hamburg; C. K. MacAlpine & Co., 33 bls. from Gothanburg; Thurnauer & Co., 36 cs. from Antwerp; F. B. Vandegrift & Co., 6 cs.



Superior materials

MADE of the best phosphor bronze or brass, the toughness and strength of Superior wires enable them to withstand the hardest usage for the greatest length of time.

Wires and facings for

Fourdriniers, Harpers and Yankees
Cylinder Machines and Wet Machines
Thickeners, Deckers and Save-alls

The William Cabble Excelsior Wire Mfg. Co.

74-88 Ainslee St.
143-151-162 Union Ave. Brooklyn, N. Y.

Longcrimp Fourdrinier Wires

USED EXTENSIVELY ON
Kraft, Wrapping and Newsprint Machines

Give Longer Average Service than the Regular Weave

Made By

The Lindsay Wire Weaving Company
(Collinwood Station) CLEVELAND, OHIO

See page 362 in the 1927 Paper and Pulp Mill Catalogue

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

from London; L. T. Piver, 13 pkgs. from Havre; Premier Flong Co., 65 cs. from Hamburg; O. M. Baxter, Inc., 26 cs. from Gothenburg; National Bank of Brooklyn, 170 reels from Rotterdam; Order, 188 reels from Rotterdam, 6 cs. London and 34 cs. Hamburg.

Miscellaneous—Japan Paper Co., 7 cs. from Havre, 14 cs. Genoa and 8 cs. Rotterdam; Keller-Dorian Paper Co., 75 cs. from Havre; Coenca-Morrison Co., 3 cs. from Havre and 3 cs. Southampton; Judson Freight Forwarding Co., 12 cs. from Havre; S. H. Pomerance Co., 14 cs. from Havre; Hensel Bruckman & Lorbacher, 40 cs. from Havre and 23 cs. Bremen; Whiting-Patterson Co., 57 cs. from Southampton; Richard Shipping Co., 13 cs. from Bremen and 32 cs. Havre; Martin & Bechtold, 27 cs. from Bremen; S. Gilbert, 19 cs. from Bremen; J. H. Schroeder Banking Corp., 11 cs. from Bremen; F. Henjes, Jr., Inc., 2 cs. from Genoa; H. Reeve Angel & Co., 4 cs. from Yokohama; Essbee Corp., 18 cs. from Antwerp; E. Daiber, 7 cs. from Antwerp; Atlantic Forwarding Co., 11 cs. from Hamburg and 2 pkgs. Havre; J. Henschel & Co., 6 cs. from Hamburg; American Exchange Irving Trust Co., 74 cs. from Hamburg; Haviland China Co., 6 cs. from Havre; F. L. Kraemer & Co., 10 cs. from Havre and 13 cs. Bremen; Tamm & Co., 8 cs. from Rotterdam; P. H. Petry & Co., 15 cs. from Rotterdam, 5 cs. Hamburg and 5 cs. Havre; International Acceptance Bank, 101 bls. from Rotterdam; W. Van Doorn, 250 bls. from Rotterdam; Freedman & Slater, 2 cs. from Hamburg; Bendix Paper Co., 28 cs. from Hamburg; Arnhold & Co., 21 cs. from Hong Kong; Panama-Pacific Line, 7 cs. from London; E. M. Sargeant Co., 10 cs. from Gothenburg; Schmidt, Pritchard & Co., 3 cs. from Hamburg; Banca Commerciale Italiano Trust Co., 16 cs. from Hamburg; J. A. Raber, 14 bls. from Gothenburg; F. Murray Hill, Inc., 5 cs. from Bremen; P. Maguire & Co., 20 cs. from Antwerp; Charles W. Williams & Co., 5 cs. from Antwerp; Borden & Riley Paper Co., 23 cs. from Antwerp; J. H. & G. B. Siebold, 25 cs. from Canton and 25 cs. Hong Kong; International Forwarding Co., 17 cs. from Rotterdam and 21 cs. Hamburg; J. Beckhardt Co., 12 cs. from Rotterdam and 8 cs. Bremen; R. F. Downing & Co., 8 cs. from Hamburg and 4 cs. Havre; Manufacturers Trust Co., 28 cs. from Hamburg; Brown Bros. & Co., 11 cs. from Hamburg; W. J. Byrnes & Co., 5 cs. from Hamburg and 8 cs. Liverpool; O. Ray, 4 reels from Gothenburg; J. E. Anderson & Co., 6 cs. from Gothenburg; G. W. Sheldon & Co., 8 cs. from London; C. H. Boulin, 36 cs. from Havre; Landsdowne & Co., 3 cs. from Havre; Hennigson Sommer Co., 13 cs. from Havre.

Market Quotations

(*Continued from page 1769*)

BONDS	BID	ASKED
Hammermill Paper Co. 6s, 1939	100	102
Hoberg Paper & Fibre Co. 7s, 1937	94	96
Industrial Fibre 8s	96	
Itasca Paper Co. 6s	97	
Itasca Paper & Prairie River 5½s	96	
Kalamazoo Vegetable Parchment 6s, 1938	99	101
Kieckhefer Container 5½s, Serial		99½
Lake Superior Pulp & Paper 6s, 1941	Mkt.	
Lake St. John Power & Paper 6½s, 1942	95	98
Marathon Paper Mills 5½s, 1942	100¼	
Manitoba Paper 6½s	100	
Minnesota & Ontario Paper Co. 6s, 1931-50	Mkt.	
Missisquoi Pulp & Paper 7s, 1929	99	
Marinette & Menominee Paper 7½s, 1936	103	104½
Mead Pulp & Paper Co. 5s	Mkt.	
Mengal Co. 7s, 1934	103	
Missisquoi Pulp & Paper 6s, 1945	97	
Monroe Paper Products 7½s, 1932	97	
Munising Paper Co. 6s	96½	100
Nekoosa-Edwards 6s	96½	100
Ontario Pulp & Paper Co. 6s, 1931	108	
Ontario Pulp & Paper Co. 6s, 1943	Mkt.	
Oswego Falls Paper 6s, 1941	99	102
Oswegatchie Paper Co. 6s		BW
Oxford Paper Co. 6s	102	104
Oxford Miami Paper Co. 6s	102	104
Paterson Parchment Paper 6s, 1938	101½	102½
Parker Young Co. 6½s, 1944	98	
Port Alfred Pulp & Paper 6½s, 1943	Mkt.	
Price Bros. 6s, 1943	105¼	106½
Paper & Textile Machinery Co. 7s	100½	
Penobscot Chemical Fibre Co. 6s, 1942	102½	
Provincial Paper Co. 6s, 1941	102	
Price Bros. 6s, 1932	105	
Peerless Paper Co. 6s	98	100
Queen City Paper Co. 7s, 1933	97½	100
Richardson Co. 6s, 1938	100	
River Raisin Paper Co. 6s, 1936	99½	101
Roland Paper Co. 6s, 1937	99	
St. Anne Paper Co. 6½s, 1946	102½	103½
St. Regis Paper Co. 5½s, 1946	100½	
St. Regis Paper Co. 6s, 1931	101	
St. Lawrence Paper Co. 6s, 1946	99½	101
Smith (Howard) Paper Co. 6s, 1934	101½	
Spanish River Pulp & Paper 8s, 1941	106½	107½
Spruce Falls Power & Paper 5s, 1920		100
Spanish River Pulp & Paper 6s, 1931	107	
Stevens & Thompson Paper 6s, 1942	93	94
St. Croix Paper 6½s, 1938	95	97
Taggart Bros. 6s, 1944	95	100
Tait Paper & Color Industries 6s	90	92
Ticonderoga Pulp & Paper 6s, 1940	99	101
Tomahawk Craft Paper 7s, 1928	95	98
Tonawanda Paper Co. 5½s	100½	
United Wall Paper 6s, 1947	96	98
Whitaker Paper Co. 7s, 1942	107½	108
Wayagamack Pulp & Paper Co. 6s, 1951	103	104
Warren (S. D.) 6s, 1945	103	
Watab Paper Co. 6½s, 1942	103	
Western Quebec Paper 6½s, 1948		75

PROFITS *for* 1928

PROFITS for 1928 will be affected more than ever by the ability to economically produce a better sheet than your competitors.

Advertisers, printers and other buyers are becoming more critical and exacting in their paper requirements—a natural outgrowth of the increasing intensiveness of their own keen competition for existing and potential business. The paper maker who is to get his share of the business must fall in line.

You will find that Norwood Filters —with their ability to give you continuous and dependable filtration of your water supply—will be a material aid in helping you to get a better sheet and in helping you to keep your plant in continuous operation.

Filtration is a matter you should look into right now. Norwood's engineers will give you information and suggestions without obligation. Catalogs are yours for the asking.

Norwood Engineering Co.

Florence, Mass.

Morey Paper Mill Supply Co.

Vulcan TRADE MARK

99 CHAUNCY St. BOSTON, MASS.

Sole Selling Agents

"LAMBETH" COTTON TRANSMISSION ROPE
and EGYPTIAN COTTON ROPE FOR SHEAHAN CARRIERS
Careful, Intelligent, Quick Service

UNION SCREEN PLATE CO.

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

Union Bronze Screen Plates
(Best phosphorized Cast Metal)
Old Plates RECLOSED and RECUT to accurate gauge
UNION BRONZE SCREWS for Screen Plates
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed
The Witham Screen Plate Fastener, Patented
THE ORIGINAL THE BEST

SCRANTON

Centrifugal

Steam Triplex Plunger
Vacuum Pumps Jet Condensers

Manufactured by
The Scranton Pump Co., Scranton, Pa.

PUMPS

POWER PLANTS

Complete Service
Design
Construction

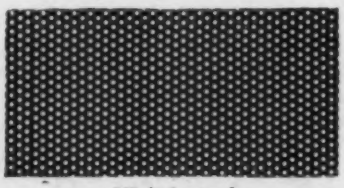
THE RUST ENGINEERING CO.
PITTSBURGH, PA.

HARDY BRONZE

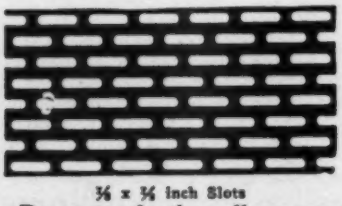
SCREEN PLATES
ACID RESISTING
VALVES

Wm. A. Hardy & Sons Co.
Fitchburg, Mass.

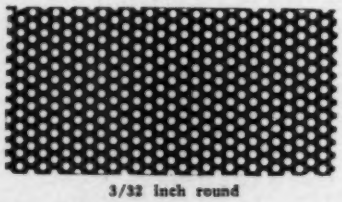
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



3/4 x 3/4 inch Slots



3/32 inch round

Steel, Copper, Brass, Bronze and other alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS, 57-65 Fairmount Ave., Jersey City, N. J.

Whitman Parsons Pulp & Lumber Co. 8s Units	15	20
Westfield River Paper Co. 7s	89	93
STOCKS		
American Book Co. Common	160	165
American Sales Book Co. Common	71	74
American Sales Book Co. Preferred	107	
Abitibi Power & Paper Co. Common	147	148
American Tissue Mills Preferred	90	92
Androscoggin Pulp Co. Common	30	
Androscoggin Pulp Co. Preferred	90	
British Columbia Pulp & Paper Common	4	8
British Columbia Pulp & Paper Preferred	62½	
Brompton Pulp & Paper Common	55	57
Burt (F. M.) Preferred	Mkt.	
Burt (F. M.) Common	69	70
Belgo Canadian Paper Co. Preferred	105	
Brompton Pulp & Paper Preferred	102	
Canadian Paperboard Co. 7% Preferred	90	
Container Corp. Class "A"	14¾	
Canadian Bag Co.	180	
Champion Fibre Co. Preferred	107½	110
Champion Coated Paper Co.		125
Champion Coated Paper Co. Preferred	111	115
Champion Fibre Co. Common	250	
Crown Willamette Paper Co. Common		10
Chemical Paper Mfg. Co. Preferred	90	
Chillicothe Paper Co. Preferred		105
De Jonge (Louis) Preferred	95	97
Dryden Paper Co.	35	
Diem & Wing Preferred	93	97
Dowlington Paper Co. Preferred	101¼	
Donnacona Paper Co. Preferred	103	
Donnacona Paper Co. Common	93	
Eastern Mfg. Co.	25	28
Eddy Paper Co.		34½
Escanaba Paper Co. Preferred	40	
Frazier Co. Preferred	132	
Fidalgo Pulp Mfg. Co. Common		75
Fidalgo Pulp Mfg. Co. Preferred		105
Great Northern Paper Co.	67	70
Hawley Paper Co. Preferred	96	
Hammermill Paper Co. Preferred	106	110
Holyoke Card & Paper Co. Preferred	170	
Hinds & Dausch Co. Preferred	101	
International Pulp Co. Preferred	68	
Jessup & Moore Paper Co. 1st Preferred	45	50
Jessup & Moore Paper Co. Common	5	
Laurentide Paper Co.	110	113
Manitoba Paper Common	30	
Manitoba Paper Preferred	95	
Mengal Co. Preferred		95
Marathon Mills Co. Common	125	
Mead Pulp & Paper Co. Preferred	104	105
Mead Pulp & Paper Co. Common	62½	
Minnesota & Ontario Paper Co. Preferred	75	80
Munising Paper Co. Preferred	80	90
Munising Paper Co. Common	20	30
National Paper & Type Co. Preferred	50	
Oglesby Paper Co. Preferred	101	
Occident Pulp & Paper Preferred		20
Oxford Paper Co. Preferred	106	
Oxford Paper Co. Common	160	170
Paper Young Co.	75	
Port Alfred Pulp & Paper Co. Common	80	
Port Alfred Pulp & Paper Co. Preferred		102
Penobscot Chemical Fibre Common	75	85
Provincial Paper Co. Preferred	99	101
Price Bros. Common	78	
Price Bros. Preferred	103	
Package Paper & Supply Units	22	
Quebec Pulp & Paper Units	78	
Richardson Co. Preferred	105	
Richardson Co. Common	150	
River Raisin Paper Preferred	8¾	
Robertson Paper Co. Preferred	6	
Smith (Howard) Preferred	115	
Smith (Howard) Common	70	
Sorg (Paul A.) Paper Co. Preferred	100	
Sorg (Paul A.) Paper Co. Common	OW	
St. Regis Paper Co. Preferred	104	105
Sefton Mfg. Co. Preferred	96	99
St. Croix Paper Co. Common	150	
Scott Paper Co. Preferred	101½	103
Spanish River Pulp & Paper Preferred	150	
Spanish River Pulp & Paper Common	147	149
St. Lawrence Paper Mills 8% Preferred	117	
St. Lawrence Paper Mills Common	102	
West Va. Pulp & Paper Co. Common	50	52
West Va. Pulp & Paper Co. Preferred	101½	103½
Whitaker Paper Co. Common	61½	64
Whitaker Paper Co. Preferred	103	105
Western Paper Good "A"	24	30
Watervliet Paper Co.	10	
Watson (H. F.) Paper Co.	125	
Wayagamack Paper Co.	108	

Link-Belt Co., Chicago, announces the appointment of the following vice-presidents: George P. Torrence, with headquarters at Indianapolis, in general charge of Indianapolis operations and sales of Indianapolis plant products; George L. Morehead, Philadelphia, in charge of Eastern operations and sales; Frank B. Caldwell, in charge of the Chicago plant and sales offices tributary thereto; W. C. Carter, in general charge of production at all plants, with headquarters at the general office of the company, Chicago.

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Cuts all kinds and thicknesses of paper from news to the thickest box board, various kinds of cloths, combined cloth and paper, tinfoil and other material taken from the web.

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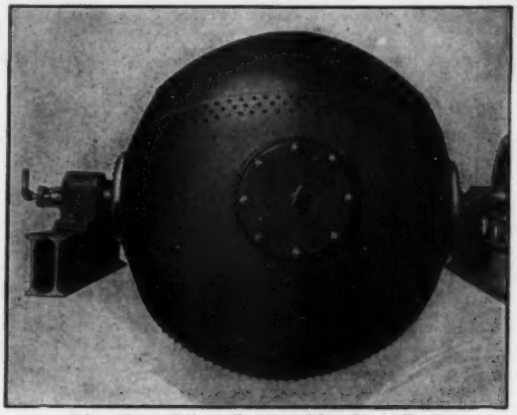
With the Biggs Rotary Bleaching Boiler you can cook and bleach loose, bulky stock like straw, paper, rags, etc. Equipped on specification with internal steam distributing system, special baffles, strainers and agitators, this apparatus is unexcelled for bleaching and cooking all grades of stock.

Biggs Rotary Cold Bleaching Engines also bleach high consistency stock whiter, stronger and more economically than any other method. Used in conjunction with efficient Biggs Digesters, this latest method of cold bleaching under pressure produces uniform results at a decided saving in power and chemical consumption.



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LARGEST MAKERS *of*

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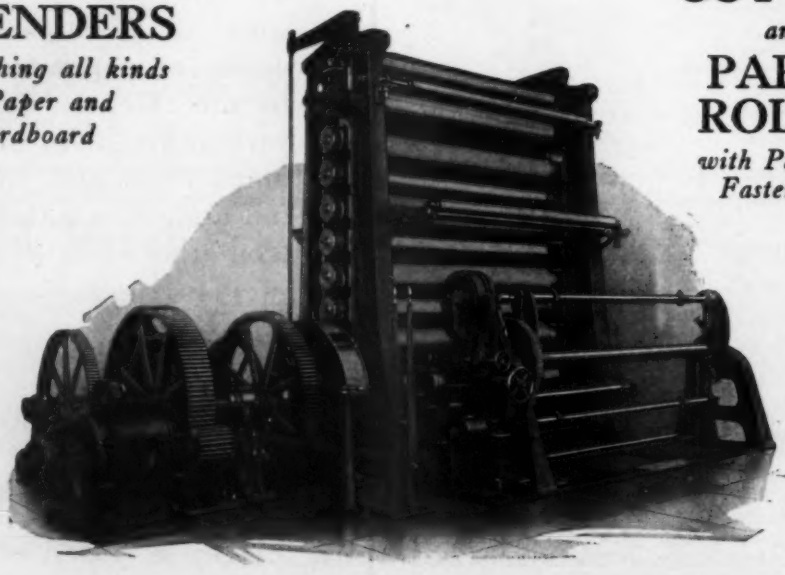
for finishing all kinds of Paper and Cardboard

COTTON *and* **PAPER ROLLS**

with Patented Fastenings



Platers, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters

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